

State Route 111 Corridor Study

**Biddeford - Arundel - Lyman - Alfred -
Sanford**

Prepared By

Maine Department of Transportation
Bureau of Planning

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I. Introduction

The quality of travel along State Route 111 has, over the years, steadily deteriorated to the point where significant delays are being experienced during the peak travel periods amid growing safety concerns. This situation has resulted, in part, from a steady growth in development occurring in southern Maine.

This study focuses on a 13.88-mile corridor of Route 111 between Biddeford and Sanford. As shown in Figure 1, this corridor extends from the Junction of Route 111 and Exit 4 in Biddeford westward to the junction of Route 4A/202 with Route 224 in Sanford.

The primary objectives of the Route 111 Corridor are to evaluate existing roadway conditions along the Route 111 Corridor; to identify existing deficiencies relative to mobility, safety, physical conditions and roadway geometrics; to estimate future traffic demands for the year 2022 to identify potential future roadway deficiencies; and to make recommendations for roadway improvements.

II. Existing Conditions

A. Public Perception on Traffic Conditions

While the MaineDOT analysis provides a detailed description of traffic conditions, the perceptions of corridor users are equally important. It is these perceptions rather than a technical analysis that will affect people's willingness to travel on the corridor. Public perceptions were gathered during February 2002. The Department participated in five meetings with the communities along Route 111, along with the Maine State Police, the York County Sheriff and the Southern Maine Regional Planning Commission (SMRPC), at which a number of issues were raised regarding Route 111. Some were about specific locations along Route 111, but some were more general in nature. The general issues may be summarized as follows:

- Route 111, as a whole, is a “mobility corridor”, with long-term needs.
- Passing and turning lanes could help with safety and delays.
- Improved access management is needed.
- Driver behavior is a major part of the problem, but conditions on the road (e.g. delays) lead to continued/increased driver behavior problems. Increased enforcement is a valuable strategy to address this problem and is supported by the public.
- Glare from the sun is a problem (East-West highway).
- Miscellaneous improvements, from “Headlights On” signs, to rumble strips, to removing tops/filling dips were suggested.

In the Summary of Concerns (Appendix I), the general concerns are described in greater detail. After the general concerns, specific concerns are listed by town, starting with Biddeford and going west along Route 111.

The Maine Department of Transportation wishes to thank all those people who participated in the public meetings for their time and input. The public comments were instrumental in determining locations where traffic data was collected and how the data was analyzed. A Route 111 Corridor Committee was formed from members of all five communities, State and County enforcement agencies, SMRPC and MaineDOT. The Corridor Committee's main focus was on land use and access management but it also served to update the respective communities on this Corridor Study and recommendations.

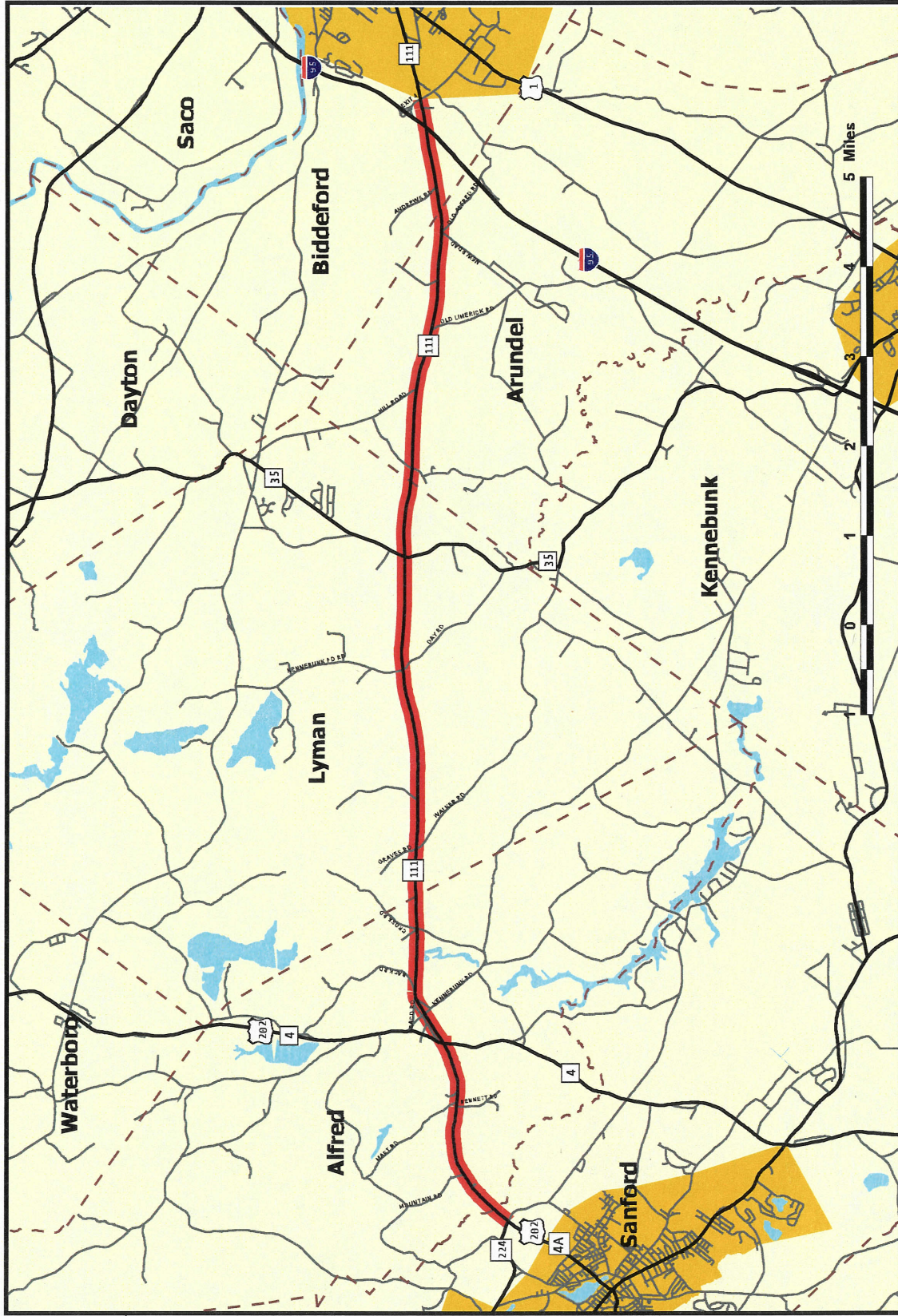
A comprehensive analysis of the performance of the Route 111 corridor has been undertaken to identify roadway geometric, safety, and traffic operational deficiencies. This evaluation required the development of a comprehensive inventory of existing conditions regarding traffic volume and composition, travel speeds, level of service, physical conditions, roadway geometrics, and crash history.

B. Traffic Volumes

1. Daily Traffic Flows

Traffic volume counts obtained in the corridor Study Area during late June of 2002 are depicted in Figure 2. The volumes shown have been adjusted to represent the annual average daily traffic (AADT). Daily volumes will be somewhat higher than AADT in summer and somewhat lower in winter.

As shown in Figure 2, volumes within the Study Area vary ranging from a low of 11,200 vehicles per day east of Route 202/4 in Alfred to a high of 24,880 vehicles per day west of Exit 4/Precourt Street in Biddeford.



Route 111 & 4A/202 Corridor Study

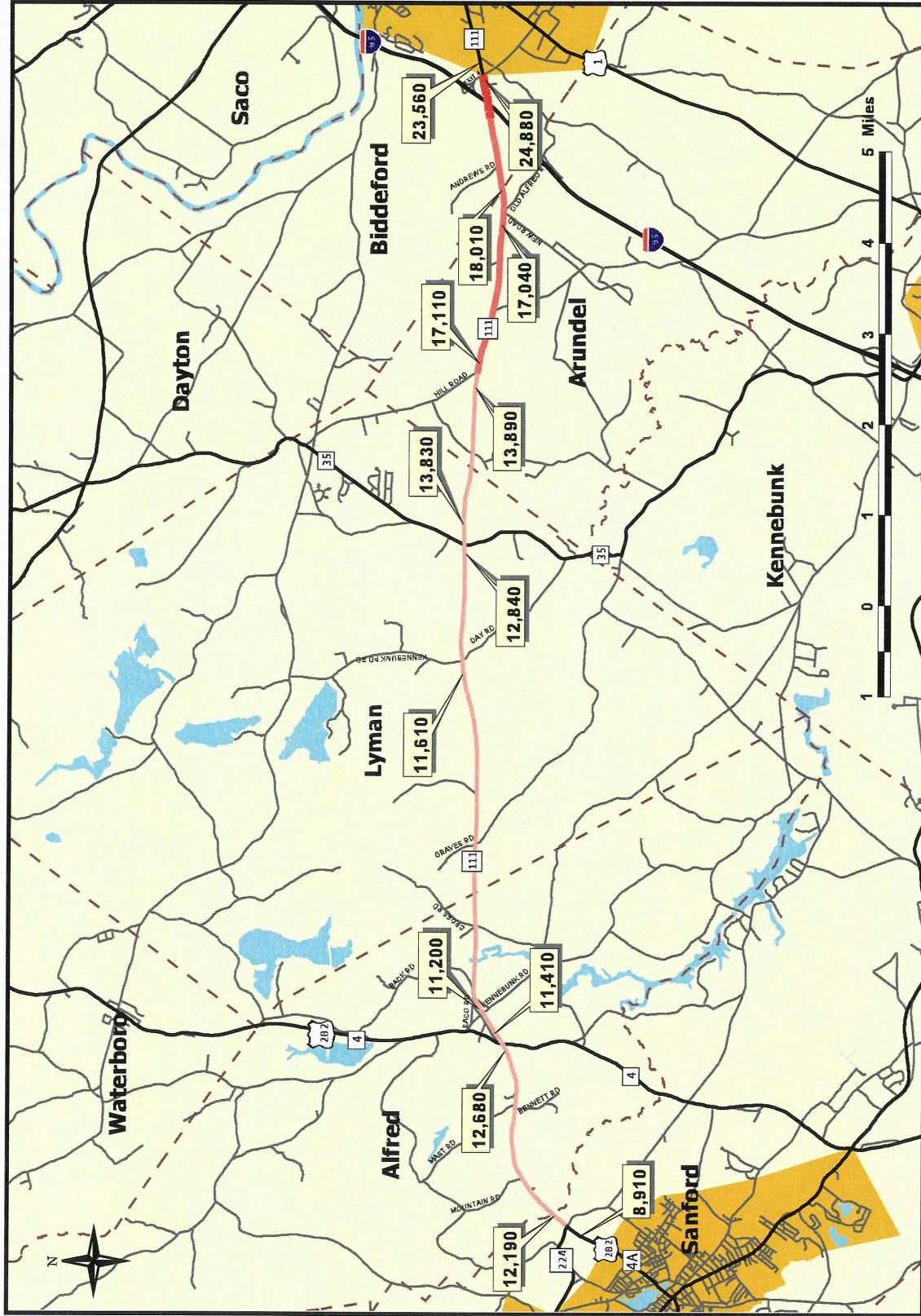
Corridor Study Area



Study Area



Figure 1



Route 111 & 4A/202 Corridor Study

2002 Average Annual Daily Traffic Volumes

2002 AADT

10,000 - 15,000
 15,000 - 20,000
 20,000 - 25,000
 > 25,000

Daily Traffic

xx,xxx Annual Average



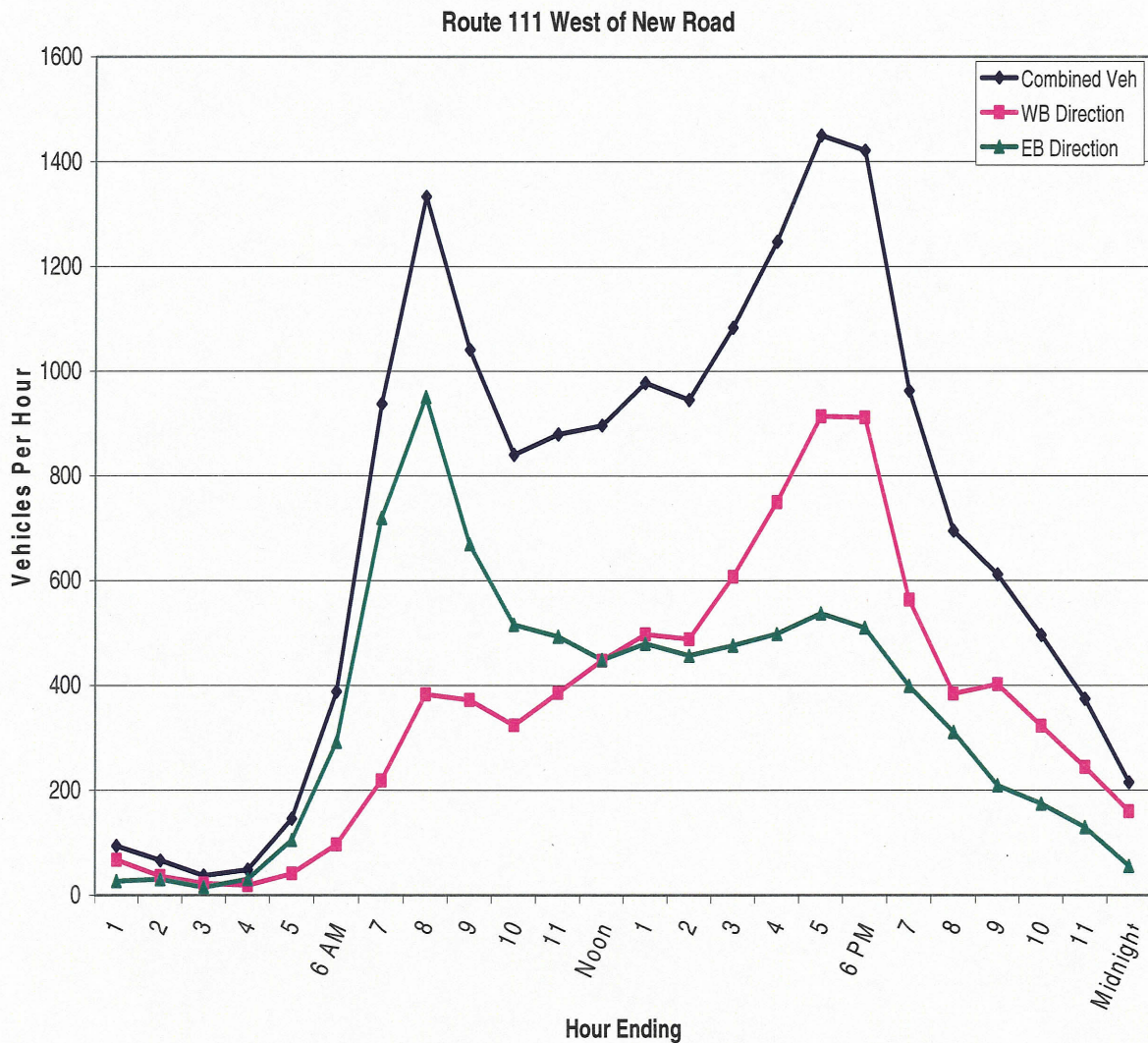
Figure 2

2. Hourly Traffic Variation

Figure 3 shows the hourly variations of traffic volume by hours of the day on June 19, 2002 on Route 111 in Arundel west of New Road. Figure 3 is a typical weekday distribution for commuter traffic on a principal arterial highway. Peak periods of travel occur in the morning between the hours of 7 and 8 AM, and in the afternoon between the hours of 4 and 6 PM. During the morning peak, the directional distribution is greater (over 70%) in the eastbound direction toward Biddeford. During the afternoon peak, the directional distribution is greater (over 64%) in the westbound direction. During the noon hours the directional distribution is around 50 % in each direction. Although the directional distribution is greater in the morning, the peak traffic (over 1400 vehicles per hour) occurs in the afternoon over a longer time period. After 6 PM, the volumes decrease and reach a low of less than 40 vehicles per hour at 2 to 3 AM.

Figure 3

Hourly Traffic Variation



3. Intersection Turning Movement Volumes

Vehicle turning movement counts were conducted in late June of 2002 at several major intersections along the corridor. These counts were conducted from 6 AM to 6 PM on all approaches of the following intersections:

- Biddeford - Shaw's/ Irving
- Biddeford – Exit 4 / Precourt Street
- Biddeford – Wal-Mart / Park n Ride
- Biddeford – Home Depot / Church Driveway
- Arundel – New Road / Old Alfred Road
- Arundel – Mill Road
- Lyman – Route 35
- Lyman – Kennebunk Pond Road / Day Road
- Alfred – Saco Road
- Alfred – Kennebunk / School Street
- Alfred – Route 4 / Route 4A
- Sanford – Route 224 / Grammar Road

The peak hour turning volumes and the time of occurrence for the above intersections are shown in Appendix II.

4. Traffic Composition

Two factors that have a significant influence on the traffic carrying capacity of a highway facility are the mix of vehicles in the traffic stream, specifically the percentage of heavy trucks, and the direction distribution, which is the proportion of vehicles traveling in the peak direction. A heavy truck is defined as any vehicle with 6 or more tires touching the pavement. The following Table 1 summarizes the results.

Table 1**Traffic Composition and Directional Distribution (2002)**

Town	Location	AADT	Peak Hour Vol.	% Heavy Trucks of AADT	Directional Distribution	% Heavy Trucks in Peak Hour
Biddeford	E/O Exit 4	23,560	2,008	5.03%	54%	3.04%
Biddeford	W/O Exit 4	24,880	2,188	6.44%	65%	3.20%
Arundel	E/O New Rd	18,010	1,663	6.55%	59%	3.73%
Arundel	W/O New Rd	17,040	1,531	7.22%	59%	4.05%
Lyman	E/O Route 35	13,830	1,264	9.14%	56%	4.83%
Lyman	W/O Route 35	12,840	1,145	8.91%	54%	4.08%
Alfred	E/O Route 4	11,410	1,055	9.25%	57%	5.04%
Alfred	W/O Route 4	12,680	1,011	7.98%	56%	4.16%
Sanford	E/O Route 224	12,190	1,303	7.18%	57%	3.15%
Sanford	W/O Route 224	8,910	891	7.41%	51%	3.14%

5. Historical Traffic Growth

Table 2 below shows the historical growth in traffic over the past years at selected locations along Route 111 between Exit 4 in Biddeford and Route 202 and Route 224 in Sanford. The historical data indicates that traffic continues to grow in the corridor study area. The Biddeford area traffic just west of Exit 4 has nearly doubled from an AADT of 12,960 vehicles in 1992 to 24,880 vehicles in 2002. Much of this is due to recent commercial developments in the area such as Super Wal-Mart and Home Depot. Other large developments are expected in the near future west of Exit 4 in Biddeford.

Based on this review, traffic on Route 111 from Exit 4 / Precourt Street to the Biddeford and Arundel town line can be expected to grow by about 4 percent per year. From the Biddeford and Arundel town line west to the intersection of Route 202 and Route 224 in Sanford, the growth rate is expected to be about 2.5 percent per year.

Table 2

Historical Traffic Trends

HISTORICAL TRAFFIC TRENDS																	
Location	2002 AADT	2000 AADT	1997 AADT	1995 AADT	1993 AADT	1992 AADT	1990 AADT	1989 AADT	1988 AADT	1987 AADT	1985 AADT	1982 AADT	1981 AADT	1978 AADT	1975 AADT	1972 AADT	1969 AADT
Biddeford, E/O Exit 4	23,560	18,020	20,210	12,250		14290											
Biddeford, W/O Exit 4	24,880	19,440	18,770			12,960		11,850	11,700	11,600	8,930	8,030		6,880		5,065	
Biddeford – Arundel T.L.	18,010	15,900	14,870	10,500		12,140		11,330					7,631		5,620		
Lyman, E/O Rte 35	13,830	12,410	11,620	9,220		10,810	9,700			9,270			5,789		4,184		
Lyman, W/O Rte 35	12,840	11,510	10,910	10,260		10,180	9,350	8,690		7,940							
Lyman, E/O Kennebunk Pond Rd		11,510	10,910	10,260		10,180	9,350	8,690									
Lyman, W/O Kennebunk Pond Rd	11,610	11,010	10,500	8,120		8,910		8,250					4,765				
Lyman – Alfred T.L.		11,790	10,100					8,290					4,689		3,725		
Alfred, E/O Rte 4	11,410	11,260	10,100	9,870		8,970	8,930	8,000		7,920			4,919		4,242		3,030
Alfred, Rte 202 W/O Rte 4	12,680	12,630	12,350	11,150		10,530	11,350	9,690									
Sanford, Rte 202 E/O Rte 224	12,190	12,360	11,620	10,630	10,810	9,850		10,100					7,040		5,800		4,635
Sanford, Rte 202 W/O Rte 224	8,910	8,820	8,540	8,240	8,270			7,370									

C. Existing Conditions Inventory

1. Roadway Geometrics

Appendix III presents a segment-by-segment inventory of existing roadway geometric and operating conditions for the Route 111 corridor study area. The following elements are included in the appendix:

- Begin and end node descriptions
- Begin and end node numbers
- Begin and end miles along the corridor
- Segment length (miles)
- Posted speeds
- Shoulder type and width
- Number of lanes
- Number of through lanes and widths
- Number of right and left turning lanes and widths
- Pavement condition rating

The Study Area was originally built in 5 different projects. Table 3 shows the historical construction projects along the Study Area.

Table 3**Historical Roadway Construction Projects**

Project No	Location		Const. Date	Travel Lanes Width (ft)	Shoulder Width (ft)	Length (Miles)
	From	To				
FAP F- 360(1)	East of Maine Turnpike in Biddeford	Route 35 in Lyman	1945*	22 Feet (18" Gravel Base)	8 Feet (6" Gravel Base)	5.871
PIN 8490.50	Exit 4 / Precourt St in Biddeford	Home Depot in Biddeford	2000	Auxiliary Lanes		0.685
PIN 7605.00	New Road in Arundel	New Road in Arundel	2000	By Pass Lane		
FAP F- 360(4)	Route 35 in Lyman	Back Road in Alfred	1949*	24 Feet (18" Gravel Base)	8 Feet (6" Gravel Base)	5.185
FAP F- 08-1(1)	Back Road in Alfred	0.28 mile west of Bennett Road in Alfred	1953	24 Feet (18" Gravel Base)	8 Feet (18" Gravel Base)	1.81
SNFAS 41-A(1)	0.28 mile west of Bennett Road in Alfred	0.17 mile west of Alfred/ Sanford T.L. in Alfred	1942*	22 Feet (18" Gravel Base)	4 Feet (Variable Base)	0.928
WPA 5418	0.17 mile west of Alfred/ Sanford T.L. in Alfred	Sanford Area	1940*	22 Feet (18" Gravel Base)	4 Feet (Variable Base)	
PIN 5674.00	Route 202/224 in Sanford	Route 202/224 in Sanford	1996	Auxiliary Lanes		

Note: Highlighted projects were original full construction projects (horizontal and vertical alignments). Those construction dates with an asterisk represents projects that were built as a "bath tub" design. In this obsolete design, the travel lanes have full depth structural gravel but the shoulders, in an effort to reduce construction costs, have minimal or no structural gravel. The disadvantage of a "bath tub" design is that water gets "trapped" in the gravel which leads to premature pavement failure.

2. Stopping Sight Distance

The stopping sight distance (SSD) for crest vertical curves were reviewed using the current AASHTO standard for a driver's eye height of 3.5 feet and a 2 foot object and compared to the existing posted speed. The design speed is based on stopping sight distance assuming a level roadway. The Headlight Sight Distance (HLSD) is based on the limitation on the distance over which headlights can project the light as it enters a sag vertical curve.

Table 4

Stopping Sight Distance

Location	Type and Length of Vertical Curve	2001 AASHTO Design Speed SSD (3.5' -2.0')	Posted Speed mph
Biddeford – Andrews Road	900' Crest	51 mph 436 ft	45
Arundel – 600 feet E/O Limerick Rd	300' Sag	35 mph 249 ft HLSD	55
Arundel – Limerick Road	800' Crest	55 mph 501 ft	55
Arundel – 600 feet W/O Limerick Rd	400' Sag	41 mph 305 ft HLSD	55
Arundel – 2500 ft W/O Limerick Rd	700' Crest	58 mph 550 ft	55
Lyman – 800 ft W/O Arundel T.L.	350 Sag	49 mph 390 ft HLSD	55
Lyman – 3100 ft E/O K. Pond Rd	600' Crest	57 mph 523 ft	55
Lyman – 2400 ft E/O K. Pond Rd	400' Sag	43 mph 326 ft HLSD	55
Lyman – 3000 ft E/O Howitt Rd	600' Crest	48 mph 400 ft	55
Lyman – 300 ft W/O Walker Rd	800' Crest	58 mph 546 ft	55
Alfred – 200 ft E/O Drown Rd	300' Crest	54 mph 487 ft	55
Alfred – 200 ft E/O Mast Rd	370' Sag	39 mph 288 ft HLSD	50
Alfred – 2100 ft E/O Mountain Rd	500' Sag	40 mph 298 ft HLSD	50
Alfred – 1200 ft E/O Mountain Rd	600' Crest	53 mph 465 ft	50
Alfred – 600 ft E/O Sanford T.L.	600' Crest	51 mph 436 ft	35*
Alfred – Sanford T.L.	500' Sag	34 mph 236 ft HLSD	35*
Sanford – 1100 ft W/O Sanford T.L.	650' Crest	49 mph 406 ft	35*

* A spot speed study was performed on 8/20/02 just west of the Intersection of Route 202 and Route 224 where it was observed that the 85th Percentile speed was 46 mph.

Note: The highlighted area is where the design speed is less than the posted speed limit.

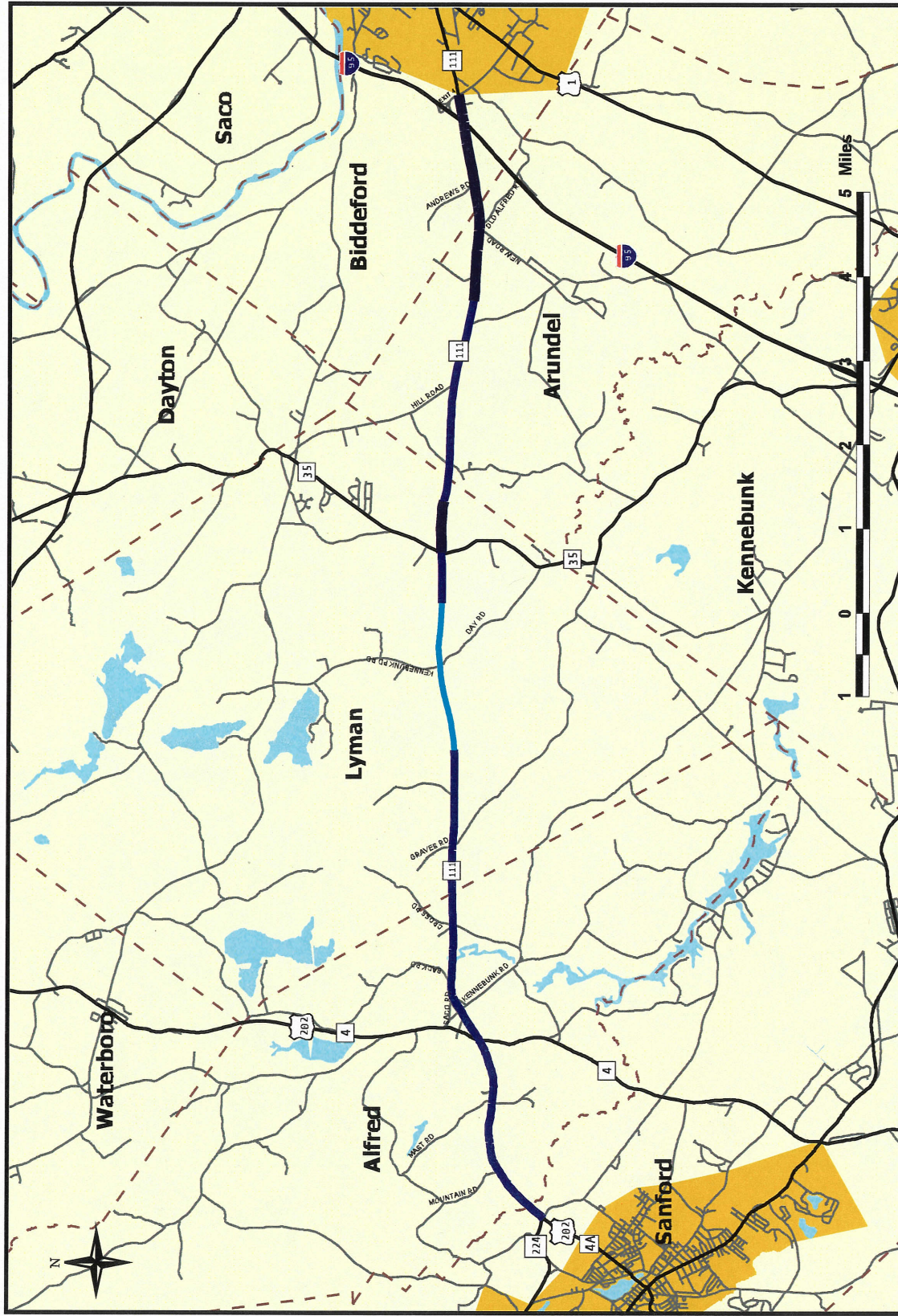
3. Pavement Conditions

The Pavement Condition Rating (PCR) is an evaluation of distresses in pavement (such as cracking and wheel path rutting). PCR's will always range from 5 for a newly paved roadway to 0 for a road that is completely deteriorated. It is generally most cost-effective to resurface a road before the PCR drops below a rating of 3. PCR's do not account for base material, shoulders, drainage or longitudinal profile (ride).

Listed below are descriptions for different PCR:

- PCR 5.0 – Excellent. New or nearly new pavements. Free of cracks, patches, or rutting.
- PCR 4.0 - Good to Excellent. Pavement exhibiting few, if any, visible signs of surface deterioration.
- PCR 3.3 – Good. Evidence of initial deterioration including hairline cracks and minor rutting.
- PCR 2.4 – Fair to Poor. Visible defects including moderate cracking, distortion, and rutting. Some patching may now be present.
- PCR 1.2 – Poor. Extremely deteriorated pavements. Defects include severe cracking, distortion, and rutting. Very extensive patching.
- PCR 0.8 – Very Poor. Pavement is completely deteriorated. No structural integrity. No salvage value.

The PCR of each segment for the latest year (2001) is shown in Appendix III and displayed graphically in Figure 4. The PCR for the study area ranges from 3.14 to 4.53. (Overall, the pavement condition along the corridor is classified as good.) The majority of the corridor falls within the category of Good to Good to Excellent except a 1.2 mile section west of Route 35 that is in the Fair category with a value of 3.14.



Route 111 & 4A/202 Corridor Study

2001 Pavement Condition Ratings

Pavement Condition Rating

- Poor (1.2 - 2.4)
- Fair (2.41 - 3.3)
- Good (3.31 - 4)
- Good-Excellent (4.01 - 5)



Figure 4

4. Roadway System

Route 111 and Route 202/4A within the Study Area have the Federal Functional Classifications designation of “Other Principal Arterial”. Other Principal Arterials are non-Interstate highways which provide long distance connections between larger population centers.

5. Safety

Crash data for the years 1999 through 2001 were used to identify high crash locations (HCL's) in the Study Area. A HCL is a location which has eight (8) or more traffic crashes and a Critical Rate Factor (CRF) greater than 1.00 in a three-year period. A highway location with a CRF greater than 1.00 has a frequency of crashes that is significantly greater than the statewide average for similar locations.

Based on the results of the crash research, one location within the Study Area meets the criteria for placement on MaineDOT's list of High Crash Locations. The only location is at Exit 4 / Precourt Street in Biddeford. 43 crashes occurred in the last three years and the CRF is 1.43. According to the injury types there were 0 fatal, 0 incapacitating, 2 non-incapacitating, 6 possible injury and 35 no injuries (property damage) with an 18.6 % injury rate.

The crash rate is determined by dividing the crashes by the amount of travel (Annual Hundred Million Vehicle Miles x Study Period in Years). Table 5 represents the combined (links and nodes) fatal crash rate for this three year period from 1999 through 2001 for the Route 111 study area is 4.21 compared to the 0.45 for the Statewide Principal Arterial Two Lane Rural. The fatal crash rate in the study area for this time period (6 of 8 in 2001) was much higher than the state average for Principal Arterial Two Lane Rural. The six fatal crashes that occurred on Route 111 in 2001 were one of the factors that brought about the Study.

Table 5

Fatal Crash Comparison

	1999	2000	2001	1999-2001 Crash Rate
Total Fatal Crashes Statewide	163	153	167	
Total Fatal Crashes on Principal Arterial Two Lanes	25	23	30	0.45
Total Fatal Crashes on Route 111 Study Area	1	1	6	4.20

Statewide, for the period 1999 through 2001, the crash rate for Principal Arterials Two Lane Rural was 109.8 (links) and 154.0 combined (links and nodes) as shown in Table 6. The crash rate during the same time period from Biddeford/Arundel town line to Route 224 was 88.5 (links) and 142.1 combined (links and nodes). The crash rate for both roadway segments (links) and combined (links and nodes) for Principal Arterials Two Lane Rural is below the statewide average.

The urban section between Exit 4 and Biddeford/Arundel town line is comprised of two sections. Table 6 represents the combined crash rate (links and nodes) for Principal Urban 2 lane section between Biddeford/Arundel town line and Wal-Mart is 175.6 compared to the state 3 year average of 367.9. The combined crash rate (links and nodes) for Principal Urban 4 lane section between Wal-Mart and Exit 4 is 253.2 compared to the state 3 year average of 478.1.

Table 6
Crash Rate Comparison

	1999-2001 Statewide Crash Rate	1999-2001 Study Area Crash Rate
Principal Arterial Two Lanes Rural (Links) (Biddeford/Arundel town line to Route 224)	109.8	88.5
Principal Arterial Two Lanes Rural (Links & Nodes) (Biddeford/Arundel town line to Route 224)	154.0	142.1
Principal Arterial Urban Two Lanes (Links & Nodes) (Wal-Mart to Biddeford/Arundel town line)	367.9	175.6
Principal Arterial Urban Four Lanes (Links & Nodes) (Wal-Mart to Biddeford/Arundel town line)	478.1	253.2

A comparison between the types of crashes in the last three year period and the statewide average for the past three years is shown in Table 7.

Table 7

Crash Type Comparison

Crash Type	Statewide 1999-2001 Total	Statewide Percent of Total %	Route 111/202 1999-2001 Total	Route 111/202 Percent of Total %
Object in Road	2,940	2.58	6	1.76
Run Off Road	26,045	22.89	41	12.02
Rear End / Sideswipe	38,369	33.72	138	40.47
Head On / Sideswipe	4,089	3.59	18	5.28
Intersection Movement	22,619	19.88	80	23.46
Pedestrians	843	0.74	1	0.29
Sled / Bike	652	0.57	0	0
Train	20	0.02	0	0
All Other Animals	457	0.40	1	0.29
Deer	12,329	10.84	35	10.26
Moose	2,065	1.81	11	3.23
Bear	80	0.07	0	0
Non Collision	1,711	1.50	5	1.47
Other	1,568	1.38	5	1.47
Unknown	0	0.00	0	0
Total	113,787	100.00%	341	100.00%

Route 111 crashes in the last three years had a higher than state average in rear-end/sideswipe, head-on/sideswipe, intersection movement and moose crashes.

Note: The highlighted area is where the percent of crash type in the Study Area (3 year) is greater than the statewide (3 year) crash type.

A comparison between the contributing factors in the last three years statewide and Route 111 in the last three years is found in Table 8. The total number in Table 8 is greater than the total number of crashes above because it includes the number of drivers for multi-vehicular crashes.

Table 8
Contributing Crash Factor Comparison

Human Factors	Statewide 1999-2001 Total	Statewide Percent of Total %	Route 111/202 1999-2001 Total	Route 111/202 Percent of Total %
No Improper Driving	85,550	48.14	318	54.08
Failure to Yield R/W	13,925	7.84	48	8.16
Illegal Unsafe Speed	15,039	8.46	19	3.23
Follow Too Close	7,302	4.11	45	7.65
Disregard Traffic Contrl	2,250	1.27	12	2.04
Driving Left of Center	1,137	0.64	5	0.85
Improper Passing	2,074	1.17	8	1.36
Improper Lane Change	2,017	1.14	2	0.34
Improper Start/Stop	917	0.52	8	1.36
Improper Turn	2,043	1.15	4	0.68
Unsafe Backing	2,941	1.66	3	0.51
No/Improper Signal	640	0.36	2	0.34
Impeding Traffic	256	0.14	0	0
Driver Inattention	28,623	16.11	77	13.10
Driver Inexperience	2,850	1.60	7	1.19
Pedestrian Violation	454	0.26	0	0
Physical Impairment	1,769	1.00	8	1.36
Vision Obscured Glass	147	0.08	1	0.17
Vision Obscured Light	1,017	0.57	3	0.51
Vision Obscured Other	2,127	1.20	2	0.34
Other Human Factor	4,057	2.28	14	2.38
Hit & Run	572	0.32	2	0.34
Total	177,707	100.00%	588	100.00%

See Appendix IV for summary of crash data (1998-2001) for road segments in Study Area.

Note: The highlighted area is where the percent of contributing crash factors in the Study Area (3 year) is greater than the statewide (3year) crash type.

D. Mobility and Operating Conditions

1. Travel Speeds

Travel time studies were conducted on July 30 and 31, 2002 along the Study Area to measure actual travel speeds and locate areas where significant travel delays are occurring. Comparison for AM peak, PM peak and overall average travel speeds with the posted speeds, are shown in Figures 5 through 7. According to *2000 Highway Capacity Manual* (HCM2000), the average travel speed is the length of the highway segment divided by the average travel time of all vehicles traversing the segment, including all stopped delay times.

Thirty-two speed and delay runs were made between 6:00 am and 6:00 pm in both the eastbound and westbound direction (see Appendix V for summary of average travel speed from speed and delay runs).

For the eastbound direction, travel times for the 14.14 mile section range from 17 minutes and 10 seconds (2:34 pm) to 20 minutes and 11 seconds (7:36 am). Slow speeds and delays for eastbound traffic are significant at the intersections of Route 4 in Alfred and Exit 4 in Biddeford for both AM and PM periods. The longest stopped delay for through traffic at Route 4 was 100 seconds and 88 seconds at Exit 4. The lowest average travel speeds were 13.4 mph in a 35 mph zone approaching Route 4 and 10.5 mph in a 35 mph zone approaching Exit 4.

For the westbound traffic, travel times for the same study area range from 18 minutes and 1 second (6:39 am) to 22 minutes and 44 seconds (3:52 pm). Slow speeds and delays for westbound traffic are significant at the intersections of Route 4 in Alfred and Exit 4 in Biddeford for both AM and PM periods. The longest stopped delay for through traffic at Route 4 was 71 seconds and 123 seconds at Exit 4. The lowest average travel speeds were 22.2 mph in a 35 mph zone approaching Route 4 and 5.9 mph in a 35 mph zone approaching Exit 4.

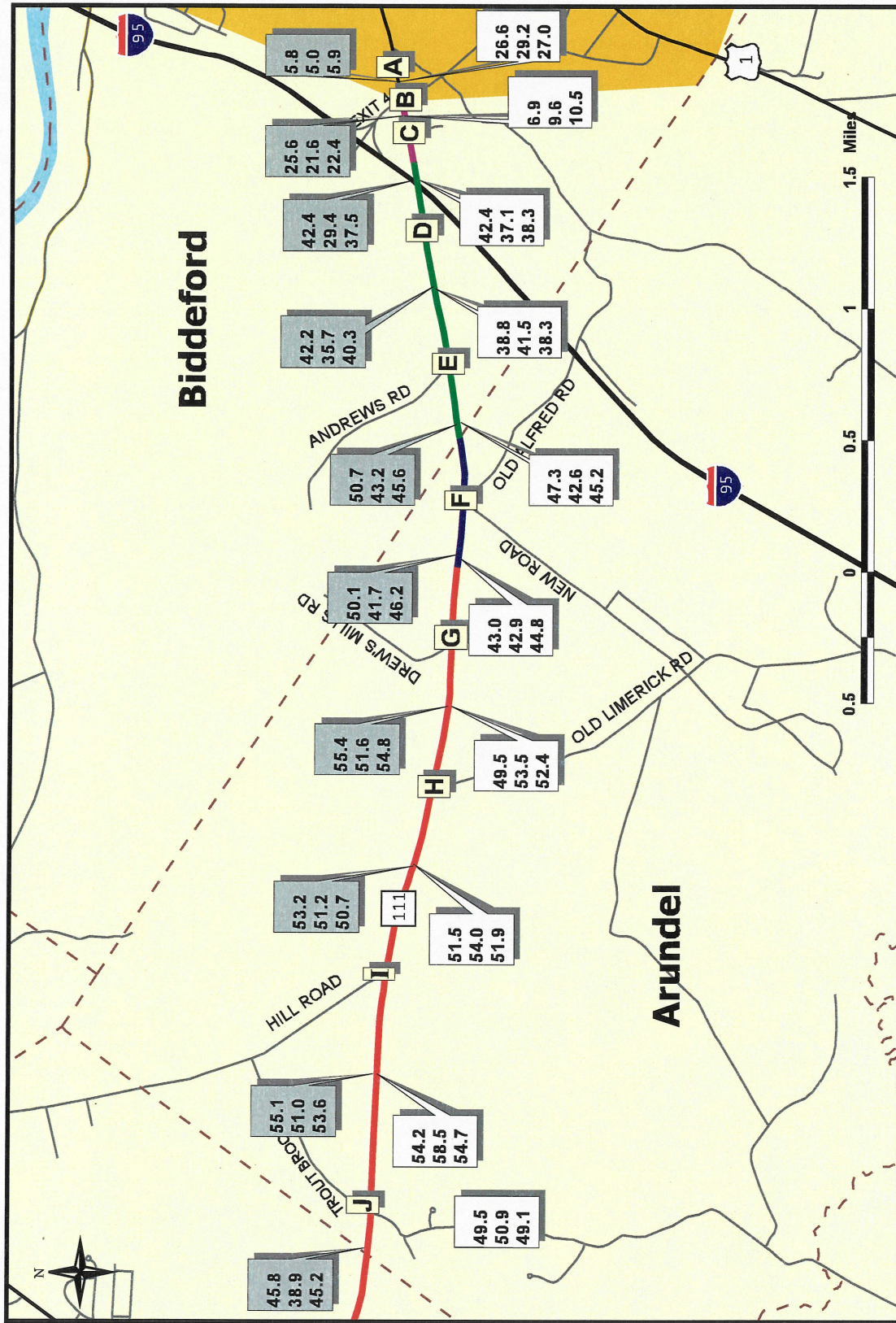


Figure 5

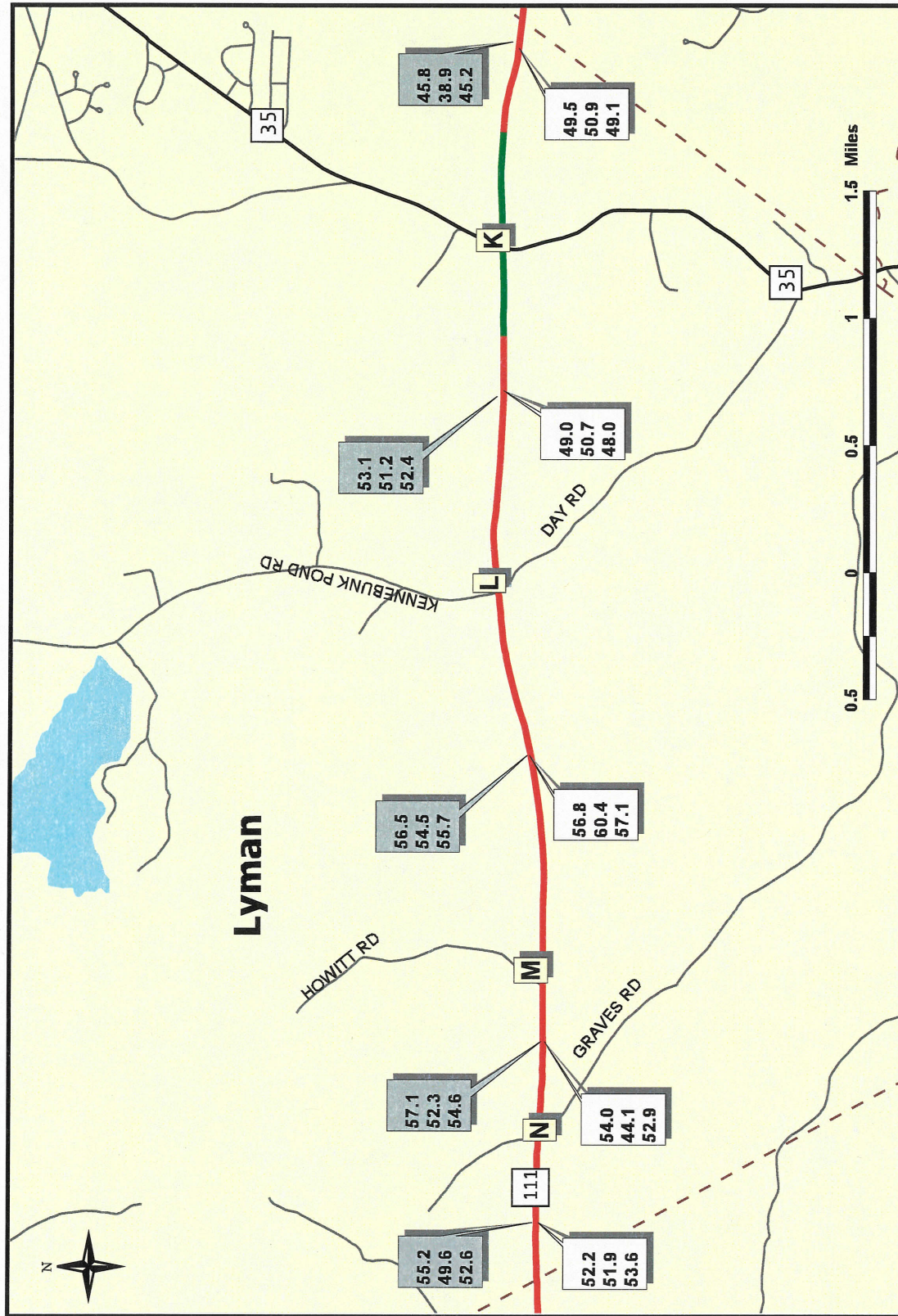
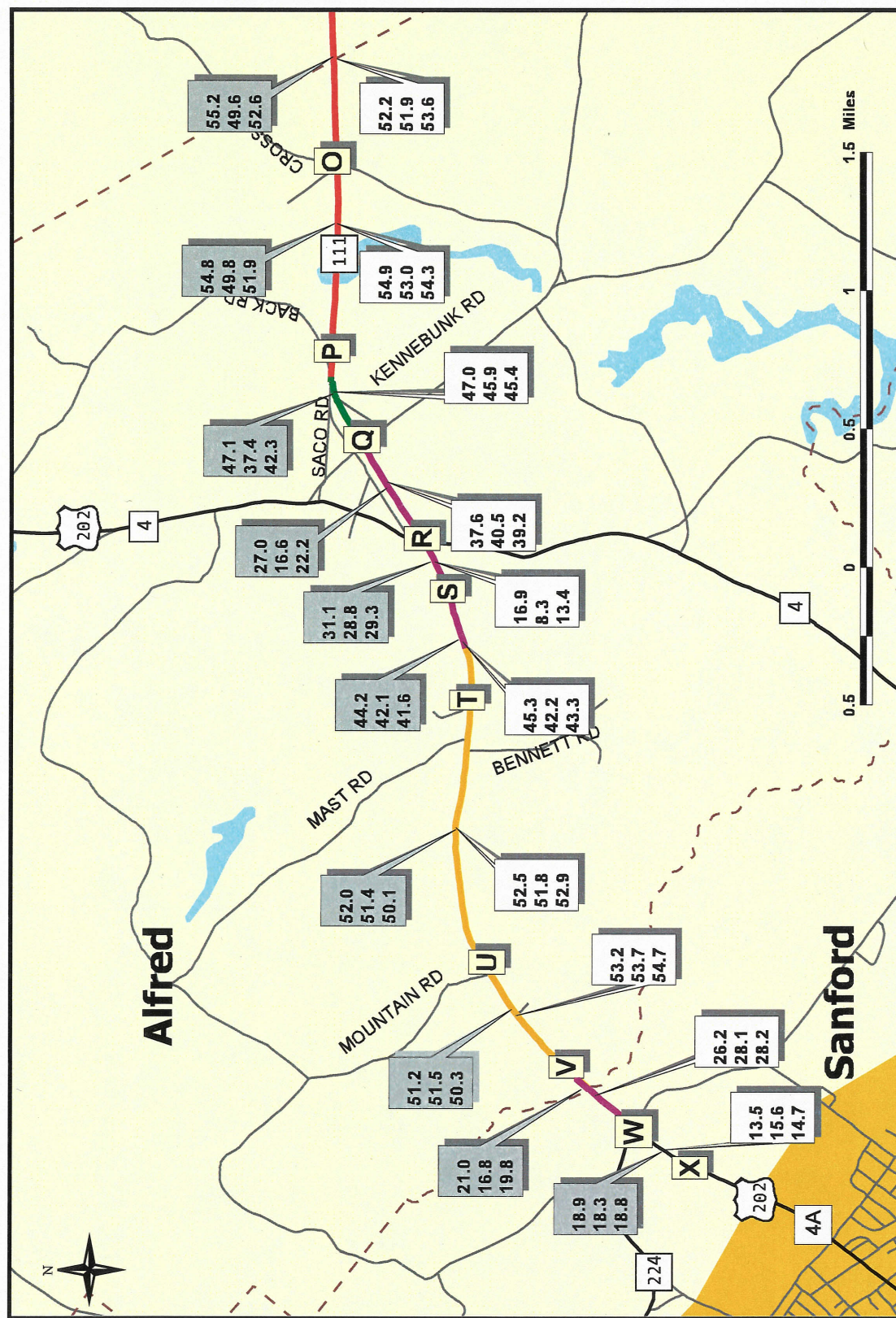


Figure 6



Route 111 & 4A/202 Corridor Study



Figure 7



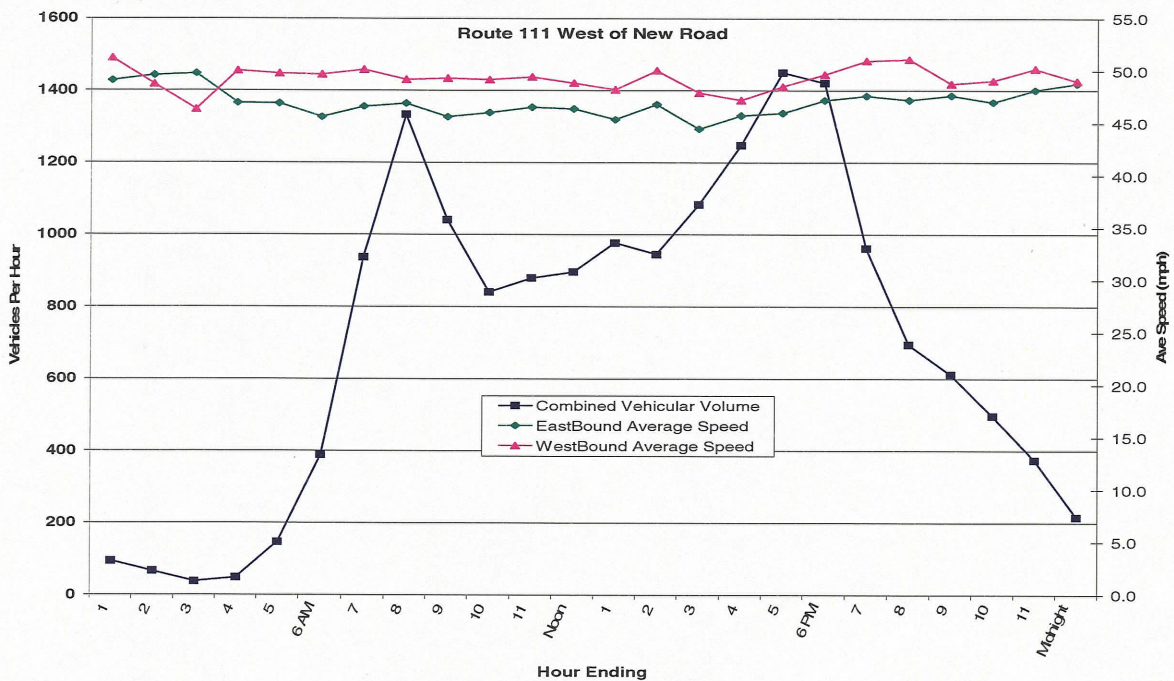
2. Hourly Speed Variation

Figure 8 shows variation of average speed with time of day, along with combined hourly volume variations, over a 24-hour period for Route 111 west of New Road. The speed remains relatively constant despite significant changes in volume. At this particular location, the average speed in the westbound direction is higher than the eastbound traffic direction. This difference may be due to the reduction of the speed limit (from 55 mph to 40 mph) and the roadside development in the area east of the data collection point. For the 8,531 eastbound vehicles that passed the collection point over the 24 – hours, the average speed was 47.0 mph. For the 8,650 westbound vehicles that passed the collection point over the 24 – hours, the average speed is 49.2 mph. Also interesting to note that the average westbound speed between the hours of 5:00 pm to 8:00 pm is slightly higher than the 24-hour average speed of 49.2 mph, this may be an example of the urgency of the commuter to go back home.

Because the speed of vehicles varies little with change in volume on two-lane highways, average speed is not the sole measure of Level of Service (LOS) for this type of facility. The other factor in determining the LOS is percent time spent following (PTSF). PTSF represents the freedom to maneuver and the comfort and convenience of travel. It is the average percent of travel time that vehicles must travel in platoons behind slower vehicles due to the inability to pass. PTSF is difficult to measure in the field. However, the percentage of vehicles traveling with headways of less than 3 seconds can be used as a surrogate measure. Headway is the time in seconds between two successive vehicles as they pass a point on the roadway, measured from the same common feature of both vehicles (for example, the front axle or the front bumper). (See Appendix VI for summary of Speed and Headway Data)

Figure 8

Hourly Speed Variation



3. Hourly Headway Variation

Figures 9 and 10 represent the Headway for both eastbound and westbound traffic west of New Road in Arundel. Headway is broken down into four ranges. The first range, in red, has an upper value of 2 seconds and represents vehicles with headways less than the recommended “safe” driving distance recommended by the State of Maine Motorist Handbook and Study Guide. The second range, in orange, has an upper value of 3 seconds, which represents the current Highway Capacity Manual (HCM 2000) threshold for PTSF. The third range, in yellow, has an upper value of 5 seconds, which represents the 1985 HCM threshold for “percent time delay”. The last range, in green, represents vehicles with headway greater than 5 seconds.

For eastbound traffic, the time period that has the highest percentage of headway (over 83%) of less than 5 seconds is from 7:00 am to 8:00 am. This corresponds with the peak hour of eastbound traffic in Figure 3. The range of vehicles with less than the safe distance is from 0% during early morning hours to a high of around 48 % (459 out of 950 vehicles) from 7:00 am to 8:00 am. The average percent for the 24 hour period of vehicles that travel less than the recommended safe distance between vehicles is around 26%. The highest percent of vehicular headway that is less than 3 seconds is 68.8% (654 out of 950 vehicles) and it is also from 7:00 am to 8:00 am. The highest percent of vehicles that are less than 5 seconds is 83.2% (790 out of 950 vehicles) and again is also from 7:00 am to 8:00 am. The range of % of total EB vehicles greater than 5 seconds is from 16.8% from 7:00 am to 8:00 am to 96.3% from 12:00 am to 1:00 am.

For westbound traffic, the time period that has the highest percentage of headway (over 76%) of less than 5 seconds is from 4:00 pm to 5:00 pm. This corresponds with the peak hour of westbound traffic in Figure 3. The range of vehicles with less than the safe distance is from 0% during early morning hours to a high of 47 % (429 out of 913 vehicles) from 5:00 pm to 6:00 pm. The average percent for the 24 hour period of vehicles that travel less than the recommended safe distance between vehicles is around 24%. The highest percent of vehicular headway that is less than 3 seconds is 65.4% (596 out of 913 vehicles) and it is from 5:00 pm to 6:00 pm. The highest percent of vehicles that are less than 5 seconds is 76.3% (697 out of 913 vehicles) and it is from 4:00 pm to 5:00 pm. The range of % of total WB vehicles greater than 5 seconds is from 23.7% from 4:00 pm to 5:00 pm to 100% from 2:00 am to 5:00 am.

In reviewing the speed and headway data (4:00 to 5:00 pm westbound direction) of all the 913 vehicles closely and using a criterion of headway of 5 seconds there were a total of 111 platoons. 841 out of 913 vehicles or 92% of vehicles were in platoons; almost 80% of these vehicles are following. This value is very close to the 76.3% based solely on time. The platoon leader speed ranges from 33 mph to 58 mph, with an average speed 49 mph. The platoon length ranges from 2 vehicles to a high of 30 vehicles, with an average of 8 vehicles. (See Appendix VIII for details of platoons)

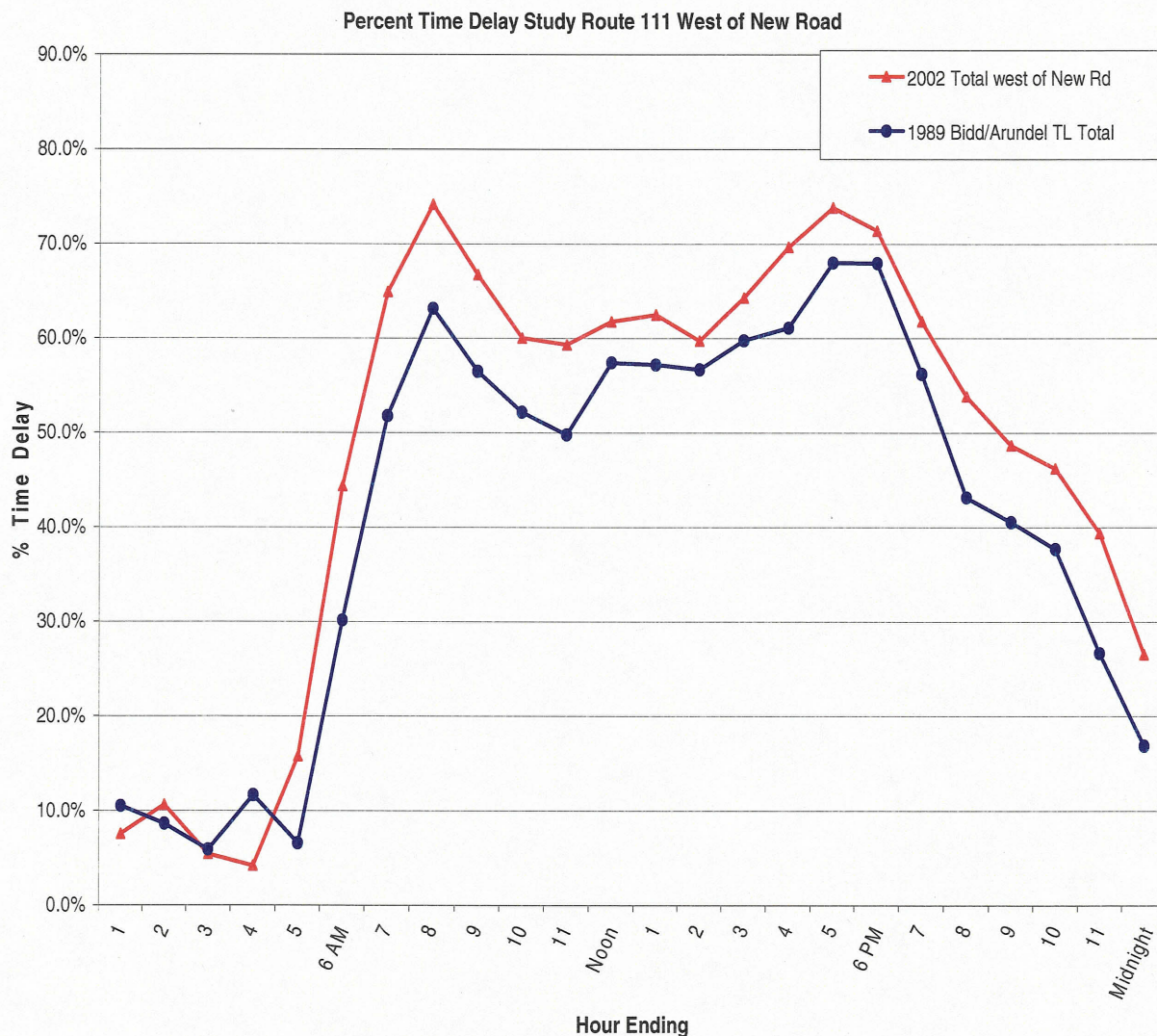
Figure 9 and 10
Hourly Headway Variation



4. Percent Time Delay

Figure 11 represents the percent time delay over a 24 hour period in a historical perspective for 1989 and 2002. The 1989 and 2002 data is total vehicles for both eastbound and westbound traffic. The 1989 data was taken from July 10 thru 13 at the Biddeford town line just over 0.25 miles east of New Road. The percent time delay patterns are very similar to each other except that the 2002 percent time delay (time spent traveling in platoons) is greater. This can be expected in that as the volume of traffic increased over the past 13 years. This was also evident from Figure 9 and Figure 10. The highest percent of total vehicles with headway less than 5 seconds (in platoons) occurred at the same time as the highest volume of directional traffic.

Figure 11
Percent Time Delay

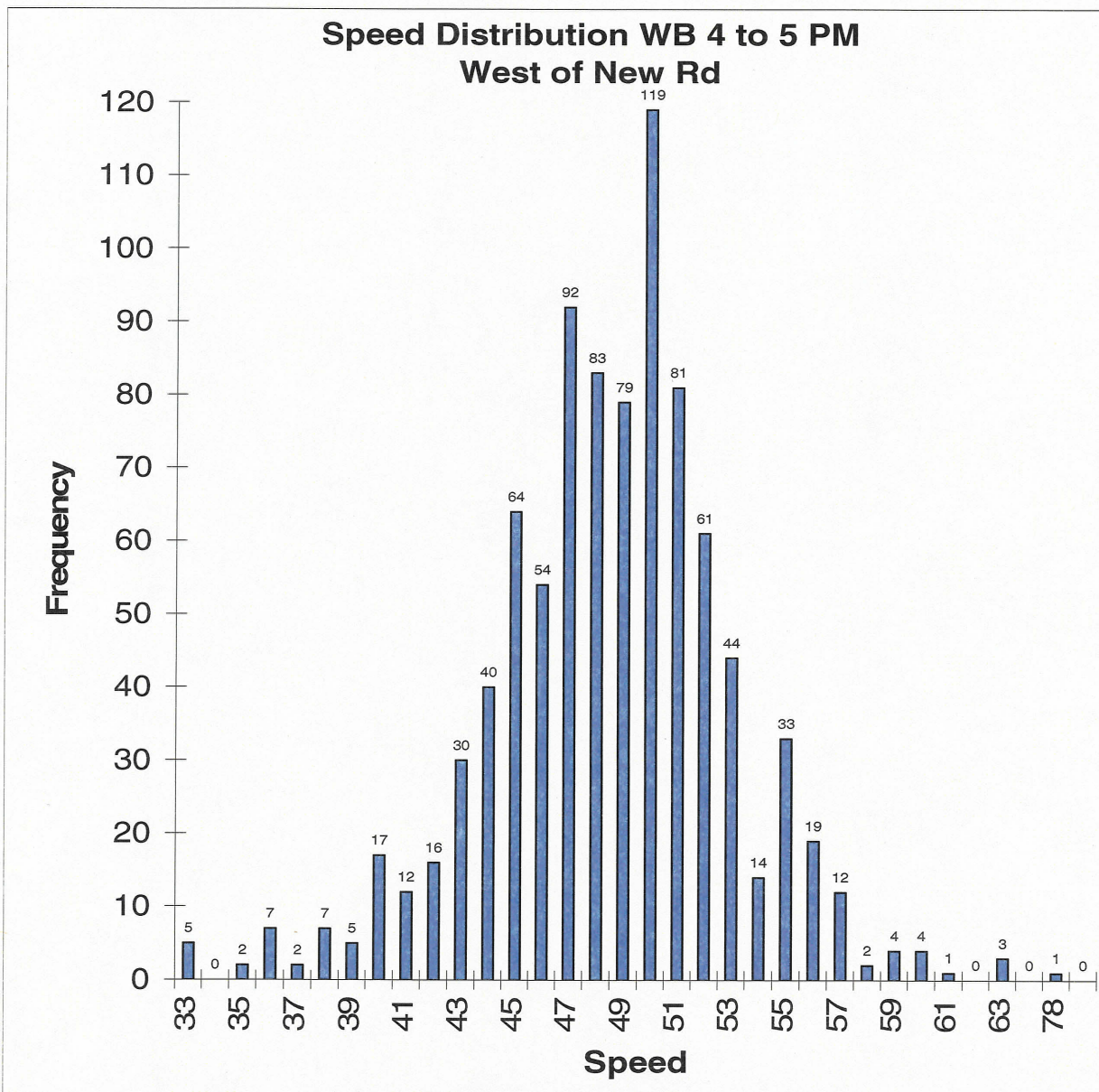


5. Peak Hour Speeds

Figure 12 represents the speed of vehicles for westbound traffic from 4:00 to 5:00 pm for the site located just west of New Road. The speed of westbound traffic ranges from a low of 33 mph to a high of 78 mph. Review of the data indicates that the vehicle traveling at 78 mph had just passed a vehicle traveling at 33 mph. Of the total 913 vehicles, the average speed is 48.5 mph and the 85th percentile speed is 52.2 mph. More vehicles (119) are traveling at 50 mph than at any other speed.

Figure 12

Speed Distribution (n=913)



6. Level of Service

One of the elements of this study is the evaluation of operating conditions along the corridor relative to existing and future traffic mobility. To assess mobility, capacity analyses were conducted for intersections and roadway links within the Study Area using the procedures from the HCM2000.

Capacity is defined as the “maximum sustainable flow rate at which vehicles or persons reasonably can be expected to traverse a point or uniform segment of a lane or roadway during a specific time period under given roadway, geometric, traffic, environmental, and control conditions”. Conditions or factors that affect capacity include the number of travel lanes, lane and shoulder width, lateral clearances, alignment, the characteristics of vehicles in the traffic stream, and traffic control and regulations in existence.

The level-of-service (LOS) concept is a qualitative measure describing operational conditions within a traffic stream taking into account a number of variables such as speed and travel time, vehicles maneuverability, traffic interruptions, comfort, and convenience. There are six levels of service defined in the manual ranging from LOS “A” to LOS “F”, with LOS “A” representing the best operational condition and LOS “F” representing the worst. Each level of service represents a range of operating conditions and the driver’s perception of those conditions.

a. Roadway

For analysis purposes, the HCM2000 classifies Route 111 roadway segments into the following two categories based on roadway type and function.

- Urban Streets (Class I, II, III, IV)
- Rural Two-Lane Highways (Class I and II)

The Urban Street level of service is based on travel speed, running time, and intersection control delay. These criteria were applied in Biddeford and part of Alfred.

Table 9

LOS Criteria for Urban Streets Class II

Level of Service	Avg. Travel Speed (mph)
A	>35
B	>28-35
C	>22-28
D	>17-22
E	>13-17
F	<=13

For Rural Two Lane Highways, LOS criteria are percent time-spent-following and average travel speed. These criteria were applied in all parts of the corridor not evaluated as Urban Streets.

Table 10

LOS Criteria for Two-Lane Highways in Class 1

Level of Service	Percent Time-Spent Following	Avg. Travel Speed (mph)
A	≤ 35	> 55
B	$> 35-50$	$> 50-55$
C	$> 50-65$	$> 45-50$
D	$> 65-80$	$> 40-45$
E	> 80	≤ 40
F	Applies whenever the flow rate exceeds the segment capacity.	

In order to determine level of service, the Route 111 corridor was divided into 6 sections for analysis purposes. The results of this analysis are summarized in the following table, which identifies each study segment and its associated level of service.

Table 11

Level of Service (LOS): Roadway Segments - Existing Conditions (2002)

Town	From	To	Section Mileage	Posted Speed	Design Category	Urban Street Class	PM Peak Avg. Travel Speed W.B	PM Peak Avg. Travel Speed Both Dir.	PM Peak Avg. Travel Speed E.B.	LOS (Both Directions)	WB Directional LOS PM Peak Existing	EB Directional LOS PM Peak Existing
			0.00									
Biddeford	Rte 111 @ Shaw's	Rte 111 @ Exit 4	0.12	35			5.0		29.2			
Biddeford	Rte 111 @ Exit 4	Rte 111 @ Wal-Mart	0.12	35			21.6		9.6			
Biddeford	Rte 111 @ Wal-Mart	Rte 111 @ Home-Depot	0.42	35/45			29.4		37.1			
		TOTAL For Section	0.66		Intermediate	II		18.4		D		
Biddeford	Rte 111 @ Home-Depot	Rte 111 @ Andrews Rd	0.55	45			35.7		41.5			
Biddeford	Rte 111 @ Andrews Rd	Rte 111 @ New Rd	0.53	45/40			43.2		42.6			
		TOTAL For Section	1.08		Rural 2 lane		39.0	40.4	42.0		E	E
											ATS PTSF	ATS PTSF
											39.3 mph 94%	42.1 mph 89.8%
Arundel	Rte 111 @ New Rd	Rte 111 @ Drews Mill Rd	0.56	40/55			41.7		42.9			
Arundel	Rte 111 @ Drews Mill Rd	Rte 111 @ Limerick Rd	0.59	55			51.6		53.5			
Arundel	Rte 111 @ Limerick Rd	Rte 111 @ Hill Rd	0.75	55			51.2		54.0			
Arundel	Rte 111 @ Hill Rd	Rte 111 @ Trout Brook Rd	0.94	55			51.0		58.5			
Arundel	Rte 111 @ Trout Brook Rd	Rte 111 @ Rte 35	1.06	55/45			38.9		50.9			
		TOTAL For Section	3.90		Rural 2 lane		45.8	48.7	52.1		E	E
											ATS PTSF	ATS PTSF
											46.2 mph 89.3%	50.4 mph 87.3%
Lyman	Rte 111 @ Rte 35	Rte 111 @ Kennebunk Pond Rd	1.37	45/55			51.2		50.7			
Lyman	Rte 111 @ Kennebunk Pond Rd	Rte 111 @ Howitt Rd	1.60	55			54.5		60.4			
Lyman	Rte 111 @ Howitt Rd	Rte 111 @ Graves Rd	0.56	55			52.3		44.1			
Lyman	Rte 111 @ Graves Rd	Rte 111 @ Drown Rd	0.96	55			49.6		51.9			
Alfred	Rte 111 @ Drown Rd	Rte 111 @ Back Rd	0.73	55			49.8		53.0			
		TOTAL For Section	5.22		Rural 2 lane		51.8	52.4	53.0		E	E
											ATS PTSF	ATS PTSF
											46.2 mph 89.3%	50.2 mph 87.4%
Alfred	Rte 111 @ Back Rd	Rte 111 @ Kennebunk Rd	0.32	45			37.4		45.9			
Alfred	Rte 111 @ Kennebunk Rd	Rte 111 @ Rte 4/202	0.41	35			16.6		40.5			
Alfred	Rte 111 @ Rte 4/202	Rte 4A/202 @ Old Rte 4 (across from school)	0.12	35			28.8		8.3			
			0.85		Suburban	II		24.6		C		
Alfred	Rte 4A/202 @ Old Rte 4 (across from school)	Rte 4A/202 @ Stearns Rd	0.46	35/50			42.1		42.2			
Alfred	Rte 4A/202 @ Stearns Rd	Rte 4A/202 @ Mountain Rd	1.03	50			51.4		51.8			
Alfred	Rte 4A/202 @ Mountain Rd	Rte 4A/202 @ 35 mph Zone	0.40	50			51.5		53.7			
Alfred	Rte 4A/202 @ 35 mph Zone	Rte 4A/202 @ Rte 224	0.24	35			16.8		28.1			
			2.13		Rural 2 lane		40.2	42.7	45.5		E	E
											ATS PTSF	ATS PTSF
											40.2 mph 88.3%	45.5 mph 85.4%
Color Key	Signalized Intersection	Biddeford Urban	Biddeford Rural	Arundel/Lyman Rural	Lyman/Alfred Rural	Alfred Urban	Alfred Rural					

b. Unsignalized Intersections

Actual levels of service for unsignalized intersections are determined by computed or measured control delay in seconds per vehicle. LOS is defined for each minor movement and not for the intersection as a whole. Control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line. LOS ranges are shown in the following table:

Table 12

LOS Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

The results of the intersection analysis under 2002 design hour traffic volume conditions are summarized in Tables 13 and 14 for five unsignalized intersections in the study area. As Tables 13 and Table 14 indicate, there are 2 unsignalized intersections with approaches that currently operate at LOS F. Left turns on the major approaches operate at LOS A or B.

Table 13

Level of Service (LOS): Unsignalized Intersections – AM Peak Existing Conditions (2002)

Town	Intersection	Minor Street				Major Street (Left)				Overall Intersection Delay (sec/veh)
		SB		NB		EB		WB		
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	
Arundel	Route 111 and New Road/ Old Alfred Road	32*	D	31*	D	-	-	11	B	2
Arundel	Route 111 and Hill Road	28**	D	-	-	7	A	-	-	5
Lyman	Route 111 and Day Road/ Kennebunk Pond Road	38	E	11	B	0	A	0	A	5
Alfred	Route 111 and Saco Street	19	C	-	-	0	A	-	-	1
Alfred	Route 111 and Kennebunk	20	C	22	C	1	A	0	A	2

* SB represents New Road and NB represents Old Alfred Road ** Taken from Sim Traffic

Table 14

Level of Service (LOS): Unsignalized Intersections – PM Peak Existing Conditions (2002)

Town	Intersection	Minor Street				Major Street (Left)				Overall Intersection Delay (sec/veh)
		SB		NB		EB		WB		
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay sec/veh)	LOS	Delay (sec/veh)	LOS	
Arundel	Route 111 and New Road/ Old Alfred Road	21.6*	C	43.4*	E	-	-	9.5	A	2
Arundel	Route 111 and Hill Road	85	F	-	-	10	B	-	-	6
Lyman	Route 111 and Day Road/ Kennebunk Pond Road	59	F	40	E	1	A	0	A	6
Alfred	Route 111 and Saco Street	24	C	-	-	0	A	-	-	1
Alfred	Route 111 and Kennebunk	31	D	33	D	1	A	0	A	4

Due to the long delays and poor operating conditions for some of the traffic movements found at four of these intersections, an analysis was undertaken to determine if traffic signal installation was warranted for further consideration as a possible improvement to these locations. According to the MUTCD, the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. The signal warrants analysis is based on traffic volumes for an average day.

Table 15 presents a summary of which warrants are satisfied at each of the intersections evaluated. The only intersection that met a signal warrant is at Hill Road. Recommendations for improvements at Hill Road are located in Part IV of the report. No new signal installations in the Study Area are recommended at this time.

Table 15

Traffic Signal Warrant Analysis for Average Day

Warrant	Arundel New/ Old Alfred Rd	Arundel Hill Road	Lyman Kennebunk Pond/ Day Road	Alfred Kennebunk Rd
Eight Hour Vehicular Volume	No	Yes (Condition B)	No	No
Four Hour Vehicular Volumes	No	Yes	No	No
Peak Hour	N/A	N/A	N/A	N/A
Pedestrian Volume	No	No	No	No
School Crossing	N/A	N/A	No	No
Coordinated Signal Systems	N/A	N/A	N/A	N/A
Crash Experience	No	No	No	No
Roadway Network	No	No	No	No

c. Signalized Intersections

Level of service for signalized intersections is evaluated in terms of control delay per vehicle. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay. The LOS criteria for signalized intersections are somewhat different from the criteria for unsignalized intersections. A signalized intersection is designed to carry higher traffic volumes and experience greater delay. The following table shows the level of service criteria:

Table 16

LOS Criteria for Signalized Intersections

Level of Service	Control Delay (sec/veh)
A	≤10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

Intersection operations along the Route 111 corridor are based on current geometry and signal timing and phasing. Level of Service analyses were conducted at seven signalized intersections within the study area. The results of the intersection analysis under 2002 design hour traffic volume conditions are summarized in Tables 17 and 18.

The intersection of Route 111 and Exit 4/Precourt Street currently operates with an overall LOS of F in the PM peak and a LOS of E in the AM Peak.

Figure 13 shows the overall delay (seconds/vehicle) for both signalized and unsignalized intersections along with the overall Level of Service for signalized intersections. For all of the intersections analyzed, the overall delay is lower for unsignalized intersections than for signalized intersections.

Table 17

Level of Service (LOS): Signalized Intersections – AM Peak Existing Conditions (2002)

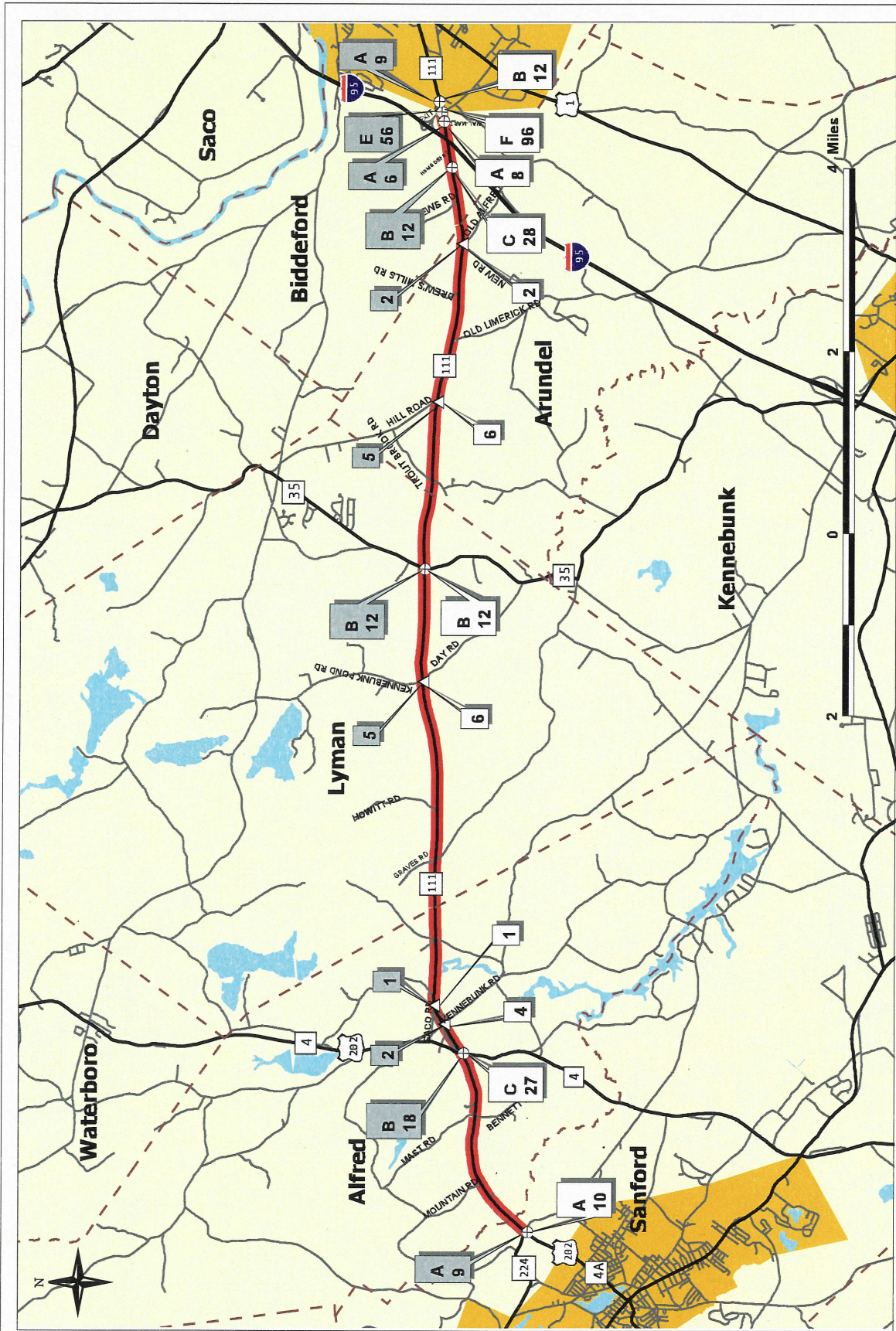
Municipality	Intersection	EB		WB		SB		NB		Overall	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Biddeford	Route 111 and Shaw's	7	A	8	A	23	C	28	A	9	A
Biddeford	Route 111 and Exit 4	35	D	114	F	41	D	37	D	56	E
Biddeford	Route 111 and Wal-Mart / Park N Ride	6	A	2	A	32	C	36	D	6	A
Biddeford	Route 111 and Home Depot / Church	12	B	6	A	44	D	40	D	12	B
Lyman	Route 111 and Rte 35	10	B	6	A	22	C	16	B	12	B
Alfred	Rte 111 and Rte 4/202	15	B	12	B	27	C	16	B	18	B
Sanford	Route 202 and Rte 224	10	B	11	B	7	A	6	A	9	A

Table 18

Level of Service (LOS): Signalized Intersections – PM Peak Existing Conditions (2002)

Municipality	Intersection	EB		WB		SB		NB		Overall	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Biddeford	Route 111 and Shaw's	8	A	12	B	21	C	28	C	12	B
Biddeford	Route 111 and Exit 4	58	E	52	D	167	F	59	E	96	F
Biddeford	Route 111 and Wal-Mart / Park N Ride	8	A	5	A	16	B	26	C	8	A
Biddeford	Route 111 and Home Depot / Church	8	A	35	D	42	D	38	D	28	C
Lyman	Route 111 and Rte 35	6	A	8	A	28	C	26	C	12	B
Alfred	Rte 111 and Rte 4/202	21	C	22	C	19	B	45	D	27	C
Sanford	Route 202 and Rte 224	9	A	9	A	11	B	11	B	10	A

Existing Conditions



Route 111 & 4A/202 Corridor Study

Overall Delay at Intersections
2002 Existing Conditions

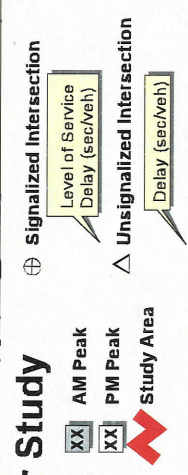


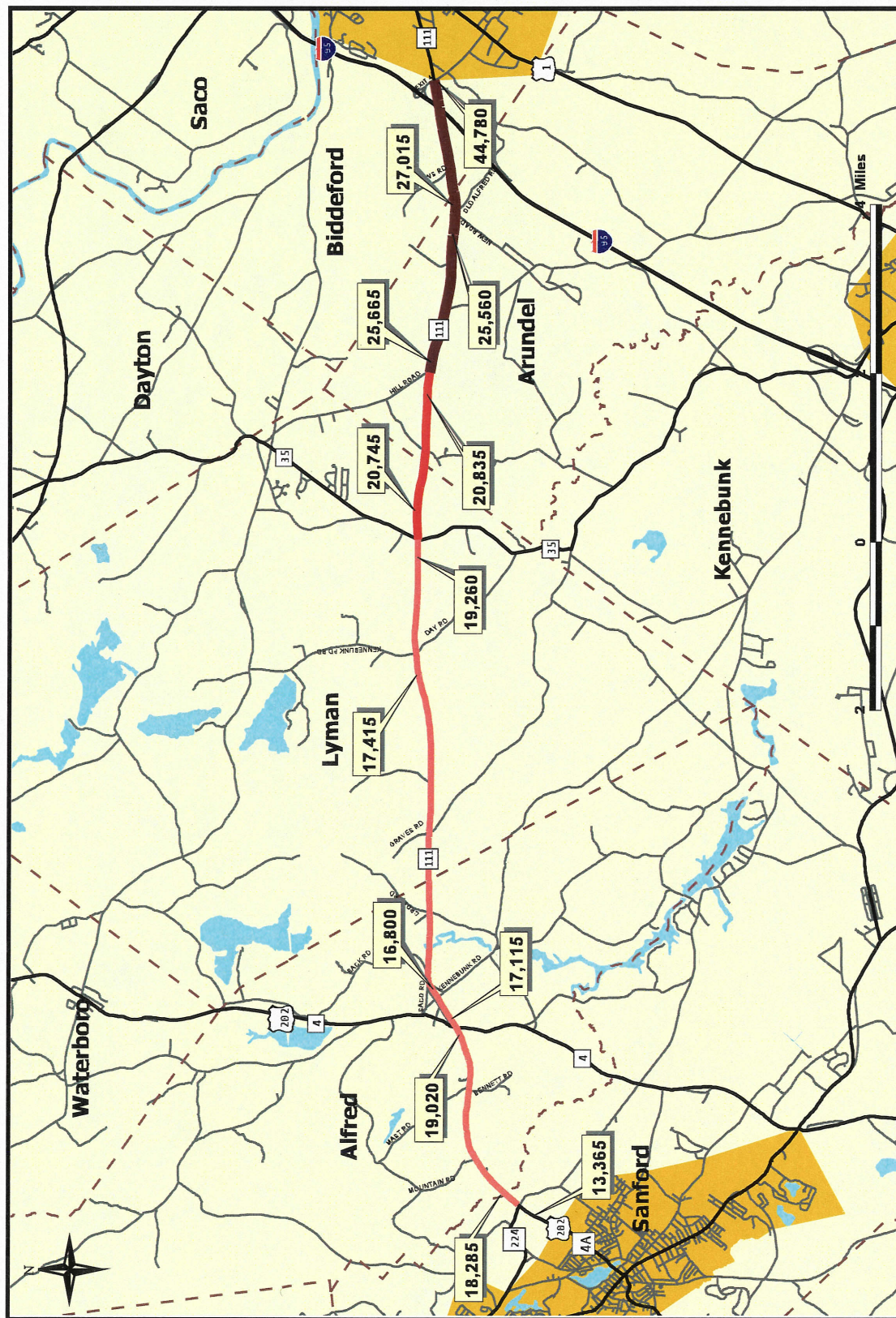
Figure 13

III. Future Conditions

To evaluate the impact of future travel on the existing study area corridor, hourly traffic volume conditions were projected to the year 2022.

The procedure used was to estimate an annual percentage increases based on historical trends and apply those increases to volumes within the study area. Traffic volumes on Route 111 from Exit 4 / Precourt St. to the Biddeford and Arundel town line are projected to grow by about 4 percent per year (80% in 20 years). From the Biddeford and Arundel town line to the intersection of Route 202/4A and Route 224 in Sanford, the projected growth rate is approximately 2.5 percent per year (50% in 20 years).

The baseline analysis of 2022 conditions assumes no major improvements of any type are implemented within the time period of the study. Figure 14 represents the projected 2022 average annual daily traffic (AADT) along the corridor study area.



Route 111 & 4A/202 Corridor Study

2022 Average Annual Daily Traffic Volumes

Daily Traffic
XX,XXX Annual Average

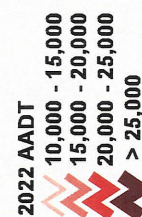
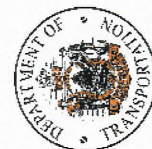


Figure 14



A. Mobility and Operating Analysis

The effects of projected Year 2022 traffic volumes on intersection and roadway segment operating conditions were evaluated using the same analysis procedure described under Section II, Existing Conditions.

1. Roadway

Future traffic operating conditions were evaluated along various segments of the study area roadways. The future roadway segment LOS results for the specific segments within the study area are shown in Table 19. The two Urban Street Class II roadway segments will decline from a LOS D and LOS C to a LOS F. The Rural Two Lane roadway segments remain at LOS E but decrease in average travel speed and increase in percent time-spent following.

2. Unsignalized Intersections

The results of the intersection analysis under 2022 design hour traffic volume conditions are summarized in Table 20 and Table 21 for five unsignalized intersections in the study area. All 5 intersections will have one or more minor approaches operating at LOS F based on 2022 design hour conditions. Left turns on the major approaches will operate at LOS A, B, or C.

3. Signalized Intersections

Level of service analyses were conducted at nine signalized intersections within the study area. The results of the intersection analysis under 2022 design hour traffic volume conditions are summarized in Table 22 and Table 23. The results show that there are 3 intersections that will operate at an overall LOS F during the 2022 design hour conditions. Also, three other intersections will operate at an overall LOS E.

Figure 15 shows the overall delay for both signalized and unsignalized intersections, along with the overall Level of Service for signalized intersections. For these unsignalized intersections, the overall peak-hour delay may exceed 50 seconds per vehicle. While no major changes in intersection control (signal, etc.) are recommended at this time, conditions at these intersections should be revisited over time to determine if changes are appropriate.

Table 19

Level of Service (LOS): Roadway Segments - Future Conditions (2022)

Town	From	To	Section Mileage	Posted Speed	Design Category	Urban Street Class	Future LOS (Both Directions)	WB Directional LOS PM Peak Future	EB Directional LOS PM Peak Future
			0.00						
Biddeford	Rte111 @ Shaw's	Rte 111 @ Exit 4	0.12	35					
Biddeford	Rte 111 @ Exit 4	Rte 111 @ Wal-Mart	0.12	35					
Biddeford	Rte 111 @ Wal-Mart	Rte 111 @ Home-Depot	0.42	35/45					
		TOTAL For Section	0.66		Intermediate	II	F		
							* ATS=4.6 mph		
Biddeford	Rte 111 @ Home-Depot	Rte 111 @ Andrews Rd	0.55	45					
Biddeford	Rte 111 @ Andrews Rd	Rte 111 @ New Rd	0.53	45/40					
		TOTAL For Section	1.08		Rural 2 lane			E	E
								ATS PTSF	ATS PTSF
								33.1 mph 95.3%	35.5 mph 94.0%
Arundel	Rte 111 @ New Rd	Rte 111 @ Drews Mill Rd	0.56	40/55					
Arundel	Rte 111 @ Drews Mill Rd	Rte 111 @ Limerick Rd	0.59	55					
Arundel	Rte 111 @ Limerick Rd	Rte 111 @ Hill Rd	0.75	55					
Arundel	Rte 111 @ Hill Rd	Rte 111 @ Trout Brook Rd	0.94	55					
Arundel	Rte 111 @ Trout Brook Rd	Rte 111 @ Rte 35	1.06	55/45					
		TOTAL For Section	3.90		Rural 2 lane			E	E
								ATS PTSF	ATS PTSF
								39.9 mph 94.5%	44.7 mph 92.1%
Lyman	Rte 111 @ Rte 35	Rte 111 @ Kennebunk Pond Rd	1.37	45/55					
Lyman	Rte 111 @ Kennebunk Pond Rd	Rte 111 @ Howitt Rd	1.60	55					
Lyman	Rte 111 @ Howitt Rd	Rte 111 @ Graves Rd	0.56	55					
Lyman	Rte 111 @ Graves Rd	Rte 111 @ Drown Rd	0.96	55					
Alfred	Rte 111 @ Drown Rd	Rte 111 @ Back Rd	0.73	55					
		TOTAL For Section	5.22		Rural 2 lane			E	E
								ATS PTSF	ATS PTSF
								(48.0 mph 89.8%)	(48.0 mph 93.7%)
Alfred	Rte 111 @ Back Rd	Rte 111 @ Kennebunk Rd	0.32	45					
Alfred	Rte 111 @ Kennebunk Rd	Rte 111 @ Rte 4/202	0.41	35					
Alfred	Rte 111 @ Rte 4/202	Rte 4A/202 @ Old Rte 4 (across from school)	0.12	35					
			0.85		Suburban	II	F		
							*ATS=6.7 mph		
Alfred	Rte 4A/202 @ Old Rte 4 (across from school)	Rte 4A/202 @ Stearns Rd	0.46	35/50					
Alfred	Rte 4A/202 @ Stearns Rd	Rte 4A/202 @ Mountain Rd	1.03	50					
Alfred	Rte 4A/202 @ Mountain Rd	Rte 4A/202 @ 35 mph Zone	0.40	50					
Alfred	Rte 4A/202 @ 35 mph Zone	Rte 4A/202 @ Rte 224	0.24	35					
			2.13		Rural 2 lane			E	E
								ATS PTSF	ATS PTSF
								35.7 mph 93.9%	40.7 mph 91.2%
Color Key	Signalized Intersection	Biddeford Urban	Biddeford Rural	Arundel/Lyman Rural	Lyman Rural	Alfred Urban	Alfred Rural		
Note: * Average Travel Speed taken from Sim Traffic									

Table 20

Level of Service (LOS): Unsignalized Intersections – AM Peak Future Conditions (2022)

Town	Intersection	Minor Street				Major Street (Left)				Overall Intersection Delay (sec/veh)
		SB		NB		EB		WB		
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	
Arundel	Route 111 and New Road/ Old Alfred Road	380*	F	145*	D	-	-	17	C	25
Arundel	Route 111 and Hill Road	**	F	-	-	8	A	-	-	>50
Lyman	Route 111 and Day Road/ Kennebunk Pond Road	531	F	14	B	1	A	1	A	>50
Alfred	Route 111 and Saco Street	48	E	-	-	0	A	-	-	3
Alfred	Route 111 and Kennebunk	75	F	71	F	1	A	0	A	8

Table 21

Level of Service (LOS): Unsignalized Intersections – PM Peak Future Conditions (2022)

Town	Intersection	Minor Street				Major Street (Left)				Overall Intersection Delay (sec/veh)
		SB		NB		EB		WB		
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	
Arundel	Route 111 and New Road/ Old Alfred Road	185*	F	282*	F	-	-	12	B	9
Arundel	Route 111 and Hill Road	**	F	-	-	13	B	-	-	>50
Lyman	Route 111 and Day Road/ Kennebunk Pond Road	**	F	559	F	1	A	0	A	>50
Alfred	Route 111 and Saco Street	87	F	-	-	0	A	-	-	4
Alfred	Route 111 and Kennebunk	526	F	403	F	2	A	0	A	>50

* SB represents New Road and NB represents Old Alfred Road

** Indicates failed level of service beyond capacity of software to calculate quantitatively

Table 22

Level of Service (LOS): Signalized Intersections – AM Peak Future Conditions (2022)

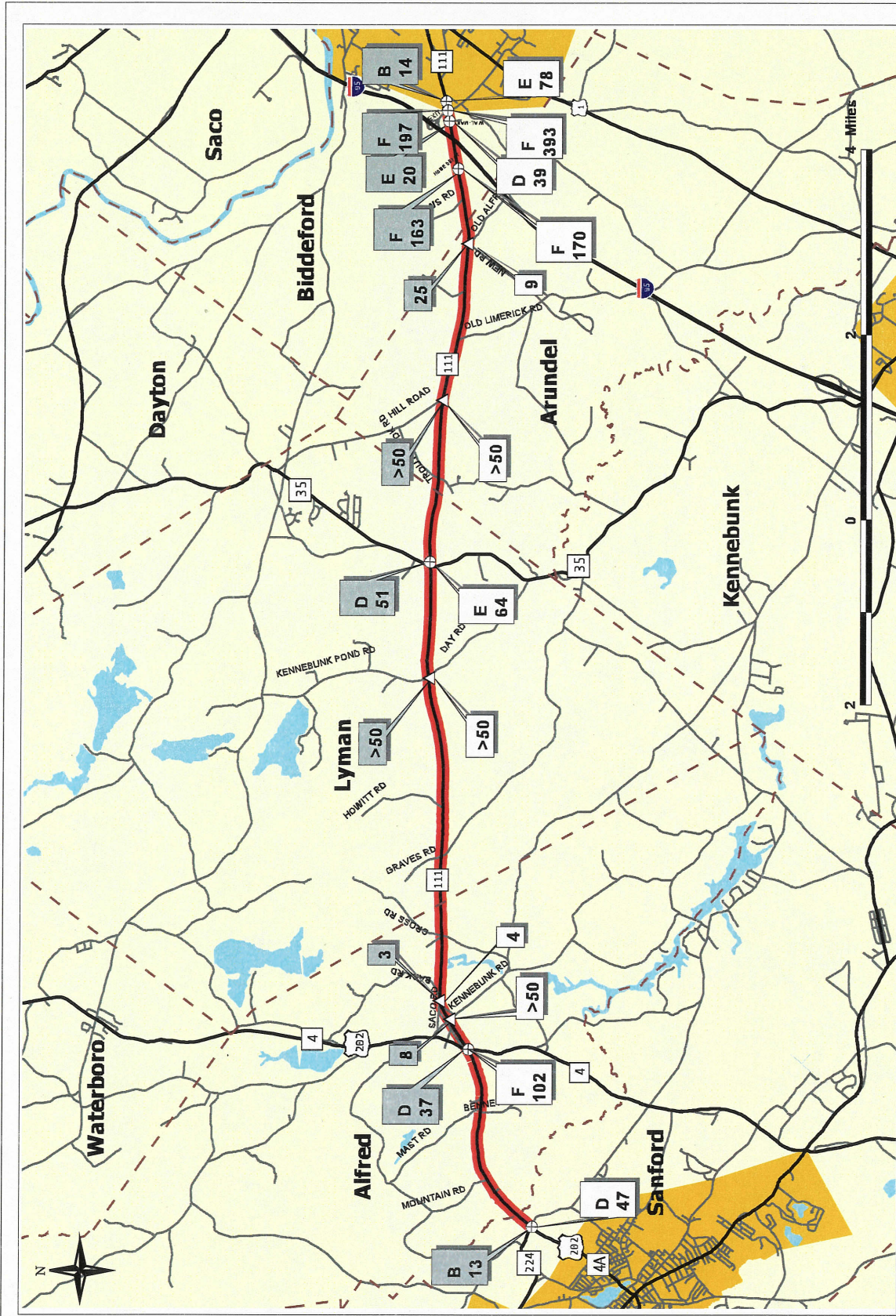
Municipality	Intersection	EB		WB		SB		NB		Overall	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Biddeford	Route 111 and Shaw's	11	B	14	B	24	C	34	C	14	B
Biddeford	Route 111 and Exit 4	191	F	184	F	141	F	294	F	197	F
Biddeford	Route 111 and Wal-Mart / Park N Ride	23	C	6	A	47	D	76	E	20	E
Biddeford	Route 111 and Home Depot / Church	234	F	18	B	51	D	42	D	163	F
Lyman	Route 111 and Rte 35	55	D	12	B	112	F	29	C	51	D
Alfred	Rte 111 and Rte 4/202	34	C	30	C	57	E	22	C	37	D
Sanford	Route 202 and Rte 224	12	B	14	B	13	B	8	A	13	B

Table 23

Level of Service (LOS): Signalized Intersections – PM Peak Future Conditions (2022)

Municipality	Intersection	EB		WB		SB		NB		Overall	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Biddeford	Route 111 and Shaw's	11	B	156	F	21	C	31	C	78	E
Biddeford	Route 111 and Exit 4	74	E	149	F	747	F	452	F	393	F
Biddeford	Route 111 and Wal-Mart / Park N Ride	35	D	23	C	35	D	126	F	39	D
Biddeford	Route 111 and Home Depot / Church	17	B	240	F	130	F	58	E	170	F
Lyman	Route 111 and Rte 35	44	D	72	E	111	F	55	E	64	E
Alfred	Rte 111 and Rte 4/202	96	F	94	F	159	F	43	D	102	F
Sanford	Route 202 and Rte 224	21	C	17	B	208	F	25	C	47	D

Future Conditions



Route 111 & 4A/202 Corridor Study

Overall Delay at Intersections
2022 Future Conditions

XX AM Peak
XX PM Peak
■ Study Area

⊕ Signalized Intersection
△ Unsignalized Intersection
Level of Service
Delay (sec/veh)
Delay (sec/veh)



Figure 15

IV. Recommendations

This section presents the transportation improvement recommendations for the Study Area. The recommendations are divided into three parts: improvements completed, short range improvements and long term improvements. The overall purpose of these measures is to promote safe and efficient movement of traffic.

A. Improvements Completed

During the public meetings many issues were brought to the Department's attention that the Department was able to act upon quickly.

1. The Department reviewed the existing signage for the study area and made the following improvements:

- Installed signs(3 feet x 5 feet) in Arundel, Lyman (2) and Alfred for Route 111 that state:
"Turn on Headlights" (black lettering on yellow)
"For Your Safety" (white lettering on blue)
- Installed lane designation signs for the intersection of Route 224/Grammar Road in Sanford.
- Installed an Intersection Warning sign for Route 202 westbound traffic prior to Stearns Street in Alfred and for Route 111 eastbound traffic prior to Walker Street in Lyman. Also, installed Intersection Warning signs for both eastbound and westbound traffic on Route 111 to include all three minor approaches at William, Drown and Clark Road in Alfred.
- Replaced the Stop signs at Kennebunk Pond Road, Day Road and Walker Street in Lyman.

2. Reviewed the intersection sight distance at all public roads. The Department improved the sight distance by trimming back branches and brush at Howitt Road in Lyman, Grammar Road/Route 224 in Sanford and other locations. The Department also, relocated eastbound Route 111 shield further away from the Old Limerick Road in Arundel.

3. Reviewed the existing striping. Based upon the Department's review, Biddeford Public Works changed the striping at Exit 4 / Precourt Street.

4. Reviewed the existing timing on all the signals and made minor adjustments to the timing of the signal at Route 35 in Lyman. The Department replaced the incandescent lamps with LED's and made minor repairs. Because LED's have a much longer life, this should improve the reliability of the signal.

5. Reviewed the existing speed zones. The existing 55 mph speed limit on Route 111 was lowered to 45 mph on the approaches to Route 35 in Lyman.

6. Upgraded wire guardrail to current safety standards in Alfred area.

B. Short-Term Improvements

Table 24 presents a summary of the short-term intersection improvement projects in a priority order.

Table 24

Short-Term Intersection Improvement Projects

Intersection Location	Municipality	Priority
Route 111/ Route 35	Lyman	*High
Route 111/202/4	Alfred	*High
Route 111/Exit 4/Precourt St	Biddeford	High
Signal Improvements	corridor wide	*Medium
Route 202/Route 224/Grammar Road	Sanford	Medium
Route 111/Kennebunk Pond/Day Road	Lyman	*Medium
Route 111/Hill Road	Arundel	Medium
Route 111/Kennebunk Pond/Day Road	Lyman	Medium
Route 111/New/Old Alfred Road	Arundel	Low
Route 111/School Street	Alfred	Low

* Projects funded in the 2004-2005 BTIP

High Priority

Route 35, Lyman

This signalized intersection currently has single-lane approaches from all directions. Without improvements by year 2022 the level of service is expected to deteriorate to E. High-speed differentials between turning vehicles and following through vehicles result in a high potential for collisions. This study recommends adding left-turn lanes on all approaches. On Route 111 these would include raised islands. Additional street lights on the existing utility poles would be needed to improve visibility and delineate the islands. According to Federal Highway Administration Report No. FHWA-RD-02-089, for installation of left-turn lanes on both the major-road approaches to rural intersections the expected reduction in total crashes is 33%. Given the projected growth in corridor traffic, it is estimated that the proposed improvements of the intersection will provide an acceptable level of service (C) for at least the next 20 years. This safety project, PIN 011187.00, has been approved as part of the 2004-2005 Biennial Transportation Improvement Program (BTIP). The cost of the project has been budgeted at \$442,500.

Route 111/202/4, Alfred

This signalized intersection recently was upgraded to include protected left-turn movements. Although this reduced the number of left-turn-related crashes it also reduced the capacity of the intersection, as is often the case when additional phasing (movements) are added to a signal. Long queues are experienced on both the mainline and Route 4 Northbound. This study recommends lengthening the existing left-turn lanes on Route 111 and Route 202/4A, installing

raised islands, additional street lights on existing utility poles, widening the shoulders, and adding right-turn lanes on the minor approaches (Route 4 and Route 4/202). Given the projected growth in corridor traffic, it is estimated that the proposed improvements of the intersection will provide an acceptable level of service (C) for at least the next 13 years. This mobility and safety project, PIN 011225.00, has been approved as part of the 2004-2005 BTIP. The cost of the project has been budgeted at \$442,500.

Route 111/ Exit 4, Biddeford

This signalized intersection currently operates at a LOS F and it is the only High Crash Location in the Study Area. Currently the signal operates as a six phase operation with the minor approaches in split phase. A split phase is when one approach has the green then the opposite approach has the green light. Although less efficient than other forms of traffic signal phasing, it is most likely this way to address safety concerns because one of the three lanes on both approaches share the through/left movement. The morning peak has a heavy movement turning left (502 vph) onto the Turnpike ramp and the afternoon peak has heavy right (604 vph) from the Turnpike onto westbound Route 111. Long queues are experienced at the intersection; it was observed at times during the summer that the traffic on the southbound approach queued all the way back to the beginning of the off-ramp on the Turnpike itself. (This problem will be lessened by the Turnpike widening project currently underway, which will relocate the off-ramp and thereby increase storage.) This study recommends adding a through lane on the Turnpike approach (separating the through/left movement) and adding a left turn lane on the Precourt Approach (separating the through/left movement). Also recommended for improved capacity/safety are additional signal heads (right-turn green arrows) during the overlap phase, this will also help to control right-turners on red. The signals from Home-Depot to Shaws should be interconnected and coordinated for improved progression. Given the projected traffic growth (4% in this area), it is estimated that the proposed improvements of the intersection will provide an acceptable level of service (D) for at least the next 6 years.

Medium Priority

Route 111 Study Area, Throughout

Since Route 111 is an east-west highway, it is susceptible to sun glare affecting drivers' ability to see at certain times of the day. The proposed project would include an additional signal head on the side of each signalized intersection for Route 111 traffic from Exit 4 in Biddeford to Route 224 in Sanford., thereby allowing drivers to look to the side to see the signal indication when the sun is positioned between the two main signal heads. This safety project, Pin 011526.00, has been approved as part of the 2004-2005 BTIP. The cost of the project has been budgeted at \$75,000.

Route 202/Route 224/Grammar Road, Sanford

The signalized intersection is included in the current MaineDOT Pre-Construction Engineering (PCE) project, PIN 9187.00. This study recommends that the project should include improving the vertical alignments on the approaches to the intersection and near the Sanford / Alfred town

line by the CMP Co entrance (see Table 4). The project should include intersection improvements such as: the addition of left-turn lanes on Route 202, an increase in length for the left-turn lanes on the minor approaches, raised islands, and additional streetlights. According to Federal Highway Administration Report No. FHWA-RD-02-089, for installation of left-turn lanes on both of the major-road approaches to rural intersections, the expected reduction in total crashes is 33%.

Kennebunk Pond Road / Day Road, Lyman

The other Kennebunk Pond Road / Day Road project below was not selected in the 2004-2005 BTIP, because of its low benefit to cost ratio (0.31) in comparison with other project needs throughout the state. However, to help Route 111 though traffic be able to identify the intersection, a flashing beacon is recommended. This safety project, PIN 011186.00, has been approved as part of the 2004-2005 BTIP. The cost of the project has been budgeted at \$9,000.

Hill Road, Arundel

Hill Road is used as a “short cut” to avoid the signal at Route 35. During the morning hours there are many left turners from Hill Road, and in the pm peak hour almost 270 vehicles have been observed turning right onto Hill Road. High-speed differentials between turning vehicles and follow through vehicles result in a high potential for collisions. Analysis shows that a right-turn lane warrant was met. This study recommends a right-turn deceleration lane on Route 111 and improved channelization for traffic entering and exiting Hill Road. The deceleration lane will reduce the severity of rear-end collisions on Route 111 by allowing right-turn vehicles to leave the through-lane at a high speed, thereby reducing motorist delay and frustration. The right-turn lane will also help vehicles exiting Hill Road by differentiating the right-turn traffic from the through traffic. Also, the improvements at the intersection of Route 35 should minimize the number of vehicles using Hill Road as a “short cut”. According to Federal Highway Administration Report No. FHWA-RD-02-089, for installation of right-turn lanes on the major-road approach to rural intersections the expected reduction in total crashes is 14%. The cost of the project has been estimated to be \$175,000.

Kennebunk Pond Road / Day Road, Lyman

This unsignalized intersection is located in a 55 mph speed zone with a commercial business (RV Dealer) on the northwest corner. High speed differentials between turning vehicles and follow through vehicles result in a high potential for collisions. Analysis showed that a right-turn lane warrant was met for westbound vehicles turning right onto Kennebunk Pond Road and that a left-turn lane warrant was met for eastbound vehicles turning left onto Kennebunk Pond Road. This study recommends that a right-turn deceleration lane be added on Route 111 westbound onto Kennebunk Pond Road. Because a left-turn lane is warranted in the eastbound direction it is best for safety to also have another left-turn lane in the opposite direction. Therefore, this study also recommends that the project include left-turn lanes on both Route 111 approaches. It also recommends raised islands, additional street lights on existing utility poles, and access control/parking restrictions at the business. The auxiliary lanes for left-and right-turning vehicles allow the storage of turning vehicles with minimum interference to through

traffic. According to Federal Highway Administration Report No. FHWA-RD-02-089, for installation of left-turn lanes on both the major-road approaches and a right-turn lane may reduce the number of crashes by more than 50%. The addition of turn lanes will also help keep overall delay to a minimum. The construction and engineering cost for the above improvements has been estimated to be \$468,750.

Low Priority

Old Alfred Road / New Road, Arundel

Old Alfred Road and New Road come together at the intersection of Route 111. From an aerial view the intersection looks like a “K”. A by-pass lane on Route 111 was constructed in the year 2000. Since the by-pass lane was installed, the intersection is no longer a High Crash Location. However, the geometrics of the intersection still are not ideal. It is recommended that the two roads not connect together at Route 111 but have a single approach. One possible solution would be to bring Old Alfred Road into New Road and then have New Road connect perpendicular to Route 111. Doing this would require acquiring a property for new right-of way. This project would be considered as part of any future reconstruction of this part of Route 111.

Saco St/ School Street, Alfred

The intersections of Saco St and School Street with Route 111 are offset from each other with School Street coming into Route 111 just west of Saco Street. School Street connects to Kennebunk Road and it mainly serves recreational fields. In the 12 hours that the intersections were counted on June 26, 2002, only 16 vehicles exited School Street. The approach to Route 111 from School Street is at a steep upgrade and is on a skew angle of approximate 40 degrees. Saco Street also connects to Kennebunk Road but on the northern side of Route 111. The location of a driveway and road (leading to a small subdivision) on the north corner of Saco Street is too close to the intersection with Route 111. There is adequate sight distance at both of these intersections, and there was only one crash in the past 4 years. (The crash involved a vehicle exiting the subdivision and being struck by a right-turner turning onto Saco Street in icy roadway conditions.) Due to the low frequency of crashes at these intersections it is unlikely the intersections would be addressed as an independent project. They could be addressed in the future as part of any reconstruction of this part of Route 111. In the meantime, MaineDOT would recommend that the Town consider making School Street one-way westbound or prohibiting left turns from exiting it onto Route 111.

C. Long-Term Improvements:

The short-term recommendations are geared mainly to improve specific signalized and unsignalized intersections. They will improve traffic flow and safety at the intersections, and as a result will improve overall traffic flow to some extent.

Passing Lanes

On the long stretches of two-lane highway that characterize the study area, the data indicates that platooning is significant. Platooning is a symptom of relatively low-speed traffic impeding the movement of higher-speed traffic. HCM2000 states; “The LOS for Class 1 highways on which efficiency mobility is paramount is defined in terms of both percent time-spent-following and average travel speed”. Our study found that during the PM peak up to 92% of the vehicles were traveling in platoons (using a criterion of headways less than 5.0 seconds). The platooning not only impairs mobility, it also leads to driver frustration, a factor cited many times during the public meetings held. Frustrated drivers are more likely to attempt risky passing maneuvers. It is important to note that the main reason motorists in platoons are unable to pass is because there are very few gaps of sufficient length in the oncoming traffic; it is not because the road has excessive curves or hills that limit passing sight distance.

The analysis of crashes in the study area (see Table 7) shows that rear end/sideswipe and head-on/sideswipe crashes are a higher percentage of total crashes than they are in the statewide averages. While no definite correlations can be drawn, rear-end crashes may result from following too closely, and head-on crashes may result from unsafe passing.

As shown in Table 2, traffic volumes have increased significantly since 1989. Figure 11 shows the negative effect this has had on the Percent Time Delay. Continued traffic growth will only make this problem worse (see Section III, Future Conditions).

This study recommends adding passing lanes at carefully chosen locations as a critical component to improving mobility along the Route 111 corridor. Passing lanes are auxiliary lanes provided for improving passing opportunities on two-lane highways. Federal Highway Administration Report No. FHWA-IP-87-2, “Low-Cost Methods for Improving Traffic Operations on Two Lane Roads” states: “short passing lanes are generally more highly utilized and more cost-effective per unit length in improving traffic performance than extended sections of 4-lane highways...” Adding a new travel lane for the whole length of the highway is very expensive and presents right-of-way and environmental concerns. By choosing the locations of passing lanes carefully, costs can be minimized. Studies have shown that passing lanes have an “effective length” several times their actual length. For example, a 1.0 mile passing lane will reduce the percentage of vehicles traveling in platoons significantly, and keep it lower for up to 5 miles or more (compared to what it would be without the passing lane). This multiplication effect is more pronounced with higher platooning percentages upstream of the passing lane.

According to the HCM 2000, for the current volumes on Route 111, the recommended length for a passing lane is between 1.0 and 2.0 miles, including tapers. The Route 111 distance between Alfred and Biddeford is approximately ten miles, so two passing lanes in each direction is optimal. The midpoint is the signalized intersection at Route 35 in Lyman. In each direction, one passing lane should be before Route 35 and the other after Route 35.

The following factors also should be considered:

- Limited adjacent development (and preferably no major intersections).
- Right-of-Way and environmental impacts.

- Construction cost
- Passing lanes should not be located just before coming into a town center or before a signal.

Based on all the above and consensus reached in the Route 111 Corridor Committee, the following locations are recommended:

Eastbound

- In Alfred, a one-mile passing lane beginning just east of Drown/Clark/Blueberry Road and extending easterly to the vicinity of Graves Road, depending on where the crest of the hill is located.
- In Lyman, a one-mile passing lane beginning just after Route 35 and extending easterly to Thompson/ Trout Brook Road.

Westbound

- Given current and expected development beginning at Exit 4 and extending westward it is difficult to identify a suitable one-mile section between Exit 4 and Route 35. Therefore two short segments are recommended for this five-mile stretch:
 - In Biddeford, a half-mile passing lane from Home Depot to just past Andrews Road.
 - In Arundel, a half-mile passing lane starting just west of Old Alfred Road and extending to just past the crest of the hill near Drew's Mill Road.
- In Lyman, a one-mile passing lane beginning west of Route 35 and extending westerly.

Addition of these passing lanes will significantly reduce platooning. For example, on the section between Route 35 and Back Road, the current LOS is E, with 82 % Time Spent Following (%TSF). Adding the passing lanes west of Route 35 and east of Drown Road would improve the LOS to C and decrease the Percent Time Spent Following to 62%.

Table 25

Level of Service (LOS): Rural Two Lane – PM Peak Existing Conditions (2002)

Section	Existing Conditions without Improvements						Existing Conditions with Improvements					
	Westbound			Eastbound			Westbound			Eastbound		
	LOS	% TSF	ATS	LOS	% TSF	ATS	LOS	% TSF	ATS	LOS	% TSF	ATS
Home Depot to New Road	E	94%	39.3	E	90%	42.1	D	59%	43.4	E	91%	41.9
New Road to Route 35	E	89%	45.2	E	87%	50.4	D	65%	47.2	D	66%	52.9
Route 35 to Back Road	E	82%	52.2	E	84%	52.2	C	62%	54	C	64%	53.9

ATS=Average Travel Speed (mph)

Transportation Research Records 1026, "Operational and Safety Effectiveness of Passing Lanes on Two-Lane Highways", documents benefits for adding passing lanes on two-lane highways, in

particular the decrease in crashes. The total crash rate of passing-lane sites was, on average, 38 percent less than that for comparable untreated sites and the fatal and injury crash rate was 29 percent less than that for comparable untreated sites. It also notes that while the addition of passing lanes increases the rate of passing maneuvers, it has only a small effect on the average travel speeds. These findings are consistent with the intuitive understanding that, if drivers know that passing lanes are provided at regular intervals, they will be less likely to attempt risky passing maneuvers.

Although the passing lanes would be 12 feet in width, part of the existing 8 foot shoulder could be used for this (because auxiliary lanes only require 4 foot shoulders). So the overall impact is an additional 8 feet. This study recommends PCE studies for the listed sites to determine environmental and right-of-way impacts, and construction costs.

Biddeford Area.

The Biddeford area traffic just west of Exit 4 has nearly doubled from an AADT of 12,960 vehicles in 1992 to 24,880 vehicles in 2002. This traffic growth is expected to continue, with discussions of a church major relocation/expansion and a very large retail development locating in the Biddeford portion of the Study Area. Although not presently needed, the roadway west of Wal-Mart may require a cross-section similar to that used east of Exit 4: two through lanes with auxiliary lanes at the signalized intersections. If expected future traffic growth, the intersection at Exit 4 is likely to require many additional lanes. By Year 2022 the number of lanes required for a level of service (D) would be:

- Exit 4: 3 left-turn lanes, 2 through-lanes and 2-right-turn lanes
- Precourt: 2 left-turn lanes, 2 through-lanes and 1 through/right lane
- Route 111 eastbound: 3 left-turn lanes, 2 through-lanes and 1 through/right lane
- Route 111 westbound: 2 left-turn lanes, 3 through-lanes and 1 right-turn lanes.

Space limitations and a diminishing return for each lane added may very well make this solution impracticable. Finding a long-term solution would require a more comprehensive study involving MaineDOT, MTA and the City of Biddeford.

Roadway Improvements

Overall, the paved shoulders are not in good condition with the outer edge beginning to deteriorate. With the exception of the third original project (Back Road to 0.28 miles west of Bennett Road in Alfred) this may be a result of the shoulders not having the full depth of subbase material as the travel lanes. The Department no longer builds this “bath tub” design but “daylights” the subbase for better drainage. Considering the prevailing speeds, the magnitude and composition of traffic using the corridor, standard practice would indicate that 12 foot lanes and 8 foot shoulders would be desirable. With the slightly wider travel lanes and shoulders traffic flow and safety of the motorists will be enhanced. It is recommended that when sections of the corridor are upgraded the roadway cross-section should consist of two 12 foot travel lanes, with full base 8 foot paved shoulders, where feasible. It is also recommended that areas of substandard vertical curves (see Table 4) be addressed with any roadway upgrade.

Appendix I

PUBLIC COMMENTS

During five meetings held in February 2002, a number of issues were raised concerning Route 111. Some were about specific locations along Route 111, but others were more general in nature. This summary first describes the general concerns, and then lists the specific concerns by town, starting with Biddeford and going west along Route 111. Most of the text below is quoted directly from meeting notes or from letters submitted. It should be noted that not all of these issues were held by a majority, and that some of the conditions cited have not been verified. Furthermore, the solutions proposed during discussions will need to be evaluated, and then prioritized in the budgeting process. While most of the following is taken directly from meeting notes, few editorial comments in italics have been added.

The general issues may be grouped into the following areas (shown in bold type):

Route 111 Corridor

Most everyone agreed that Route 111 needs to be considered as a whole.

- A brief observation at the amount of traffic turning at the Hill Road to feed the residential communities of Hollis, Buxton, Dayton and Lyman will indicate that Route 111 has a broad “traffiched.” The corridor study must be looking at the entire “traffiched” of the highway and making long term predictions of traffic growth. This is particularly important if there is going to be a local share to any proposed highway improvements. Inclusion of this type of land use information in the corridor study could be used as the bases for impact fees to partially offset the amount of local funds that must be raised.
- The primary goal of the corridor planning effort should be the maintenance or reestablishment of an adequate level of service along the entire corridor.
- Level of Service and reducing the severity and number of crashes may not necessarily be linked. Route 111 is a relatively straight road with paved shoulders and a moderately tame vertical alignment. Media reports indicate that many of the recent crashes appear to be due to high speed, alcohol, or driver inattention, not highway conditions or traffic levels. Any highway improvements undertaken to improve the Level of Service will not have any impact on driver-condition oriented reasons for the high number of crashes. Nevertheless, improvement of high crash locations should be the committee’s second highest priority.
- The Southern Maine Regional Planning spoke about the new access management rules that would apply to Route 111. Route 111 has been designated as a mobility corridor.
- People want to see Route 111 as a mobility corridor that gets the traffic to the Turnpike. They don’t want to see signals at every intersection.

- Many would like to see some type of proactive approach to Route 111, as opposed to reactive after each new development comes in. This might mean possibly conducting some type of corridor master plan to look at future growth and plan ahead.
- The recent adoption of new access management rules by the MDOT regulating entrances onto the state highway system should prove to be a major step in slowing the impacts of land use changes in the corridor on the capacity and safety of the highway. However, as part of the National Highway System, and as a highway with an interstate interchange, Route 111 highway traffic levels have been and are going to continue to be affected by development patterns far from the corridor.
- A long-term approach also is important. An example in Connecticut, Route 6 between Willimantic and Manchester, was used in suggesting planning now for future widening. Route 6 has experienced heavy traffic volumes for years, but widening has been delayed because the purchasing/taking property began too late. Since there is no evidence suggesting the Route 111's traffic will ever decrease, MDOT should begin preparations for widening now.

Passing /Turning Lanes

Many believe that adding passing lanes along the route would help significantly:

- Even when driving the posted speed limit, there is almost always someone driving slow enough that other vehicles queue behind them. There is enough change in vertical alignment that passing sight distances are frequently limited and except at night, traffic levels are high enough that the two severely limit passing opportunities behind the inevitable loaded truck or "little old lady" slowing traffic. An analysis of the number of crashes due to passing without adequate sight distance should be included in the study. If warranted, one of the considerations for improvements should be the construction of "climbing lanes" on some of the steeper hills. Construction of seven or eight climbing lanes would allow faster drivers to pass, limit risky passing, and both cost substantially less and have less environmental impact than the idea of converting the entire highway to four lanes.
- Queues form quickly behind school busses and other slow-moving vehicles. (More on slow-moving vehicles under "Driver Behavior".) Drivers get frustrated by the general delays and sometimes try to pass when they shouldn't.
- The fatal crashes that took place on Route 111 last year were not caused by inadequate road design, but by drivers crossing the centerline into oncoming travel lanes due to passing or driver inattention.
- John Granfield, Sanford Police Chief mentioned the possibility of creating passing lanes in certain locations along the road. This would allow traffic to spread out more, and people may be more patient and less likely to take chances if they know a passing lane is coming up. People are getting frustrated and passing when they should not. Some suggested that DOT put in passing lanes especially on the hills. They mentioned one place where the farm is located close to the road and there are dump trucks loaded that slow up the traffic.

- School Buses hold up the traffic and they don't pull off to the side to let cars pass.
- Climbing lanes would provide safer opportunities to pass vehicles that travel slowly uphill, such as trucks.
- Truck traffic was discussed. Tom Reinauer mentioned that the Southern Maine Regional Planning Commission conducted a study about the affects when the Truck Weigh Station in Kittery is open. He mentioned that the study showed approximately 200 trucks bypassed the Kittery Station (while it was open) and went through Sanford and out to Lebanon, New Hampshire.

Similarly, many believed that adding turning lanes would be helpful:

- The intersection of Hill Road is very busy during the morning and afternoon commuting hours. Providing a wider shoulder or "deceleration lane" was suggested to allow westbound traffic to more easily make a right turn onto Hill Road.
- Left-turn lanes, center-left-turn lanes, and right-turn lanes were all suggested for various parts of the corridor.
- The timing of the light does not allow loaded trucks to enter Route 111, the green phase is not long enough if you are entering from Route 35. There is also not enough room for drivers to get around vehicles making left turns off of Route 111. Widening the shoulder areas at the intersection was suggested. Changing the pavement markings was also recommended, although this would work better if coupled with the wider shoulders.
- Overall, people mentioned the driver frustration that occurs traveling Rte 111. They would like to see turning lanes as well as passing lanes.

Driver Behavior/Enforcement

Aggressive drivers are a significant problem all along the corridor:

- The fatal crashes that took place on Route 111 last year were not caused by inadequate road design, but by drivers crossing the centerline into oncoming travel lanes due to passing or driver inattention.
- More comments about driver's aggressive behavior on Route 111. There was talk about the long queues behind vehicles and school buses.
- Driver's following too close and other bad driving behaviors.

But slow drivers also contribute to the problems, by creating delays:

- A few people complained about speeding on Route 111. Chief Deputy Maurice Ouellette explained that slow moving vehicles can cause just as many problems as those that are speeding. The State Police added that they have pulled people over who are going much slower than the speed limit. These people have explained that they are frightened on the road and that is the reason they are traveling slowly. Both the Sheriff's Department and the State Police are also targeting drivers who are following too close.

Enforcement is an important tool in improving safety on the road.

- People noticed that the speed has gone down since the increase in police patrol.
- It was suggested that too many unsafe drivers are driving with suspended licenses and should not be on the road. Law enforcement officials agreed and expressed disappointment in length of time that often goes by before violators appear in court for their charges.
- It was also suggested that MDOT sponsor driver's education. At no cost, it should then be required of everyone seeking a Maine driver's license. Also, for driving instructors, consider regular updates from law enforcement agencies and MDOT on current travel patterns, "dangerous" locations, etc.

Crashes

- The fatal crashes that took place on Route 111 last year were not caused by inadequate road design, but by drivers crossing the centerline into oncoming travel lanes due to passing or driver inattention.

Glare from Sun

- Sun glare obstructs vision along the corridor at certain times of day.
- Concern about the visibility of the signal heads on Route 111 because of the sun, especially the signal at Route 224 and Route 202 in Sanford. Route 111 is an East-West highway. It was suggested that the signals have strobe lights like in Scarborough or a sign that states the signal is about to change red like in Delaware.
- The traffic lights at the Exit 4 intersection are difficult to see due to the sun angle if you are heading east in the afternoon. Possible solutions included the addition of a different "hood" over the lenses or the installation of white strobe lights during the red light phase.
- The intersection of Grammar Road and Route 224 was also discussed. The sun causes glare on the signal in the afternoon. If you are traveling from Sanford, it is very difficult to see if the light is red or green. A couple of solutions were discussed, including adding a white strobe to the red light. Another is to place a light a short distance from the intersection that would indicate when the light was about to turn red.

Other Possible Road Improvements

- Consider erecting a sign, which would advise drivers to use headlights at all times. Also, perhaps a sign indicating that the roadway is a "high patrol area" would keep drivers more alert and cause them to drive more safely. Other signs

with safety tips, such as those along the Maine Turnpike, should also be considered.

- There was a request for “Turn on Headlight” signs like they have in New Hampshire on Rte 101. Trucks Entering, Beware of Turning Traffic, and High Crash Location signs were also requested.
- Consider installing rumble strips along the center and sides of the roadway. Law enforcement officials noted that when rumble strips alert a sleepy driver, the driver’s first reaction is to jerk the wheel, which can also be very dangerous.
- There were requests to remove the tops and fill in the dips on Route 111.

Biddeford

- Biddeford officials were concerned about the number of lane shifts (due to the incremental changes from commercial development) in the short distance between Home Depot and Shaws.
- City officials would like to see MDOT take a proactive stand for a long-term solution for the area on Route 111 west of the Exit instead of a reactive response when new development is proposed in the area.
- City officials requested that for a short-term solution, the striping and signage between Shaws and Home Depot be reviewed by MDOT. After receiving MDOT’s recommendations the City can make the changes this coming season. *This request was forwarded to Randy Dunton, Division Traffic Engineer.*
- City officials raised concerns about the visibility of the signal heads at Exit 4 because of the sun.
- Sight distance at the Andrews Road intersection is very poor due to its location on the crest of a hill. If the relocation of the church (across from Home Depot) goes forward for that corner, there may have to be some improvements made.
- More development is planned for the area west of the Turnpike overpass. No new curb cuts are planned or will be allowed between Precourt St and the overpass.

Arundel

- There were concerns about the sight distance at Trout Brook, Limerick and Hill Roads.
- There was a request for a wider shoulder or deceleration lane for westbound traffic turning into Hill Road. There was also a concern about the sharp right turn on Hill Road before entering Route 111. People complained that there is now more speeding on Hill Road than Route 111.
- There were positive comments on the recently built by-pass lane across from Old Alfred/ New Road but some thought the by-pass lane wasn’t long enough.
- The town officials requested that New Road and Old Alfred Road be “Tee’d In” prior to the intersection with Route 111. Currently there is a garage between the two roads.
- There were concern about dump trucks entering Rte 111 from Hill Road and Drew Mills Road.

- A concern about cars and large trucks parking near and across the Texaco Station and blocking the view. *The town would have to write an ordinance for the No Parking and then DOT would install the signs.*

Lyman

- There were concerns about the sight distance at the intersection of Day Road / Kennebunk Pond Road and Route 111. Pauline Nadeau was concerned that when vehicles are traveling east and going up and then down the hill that they are all of a sudden at the intersection. There was talk that they would like to see a traffic signal or a flashing beacon or even a street light. During the summer this is worse because of the RV dealer located on the corner of Kennebunk Pond Road. Even though people do not park on the side of the road, it is still difficult to see due to the parking configuration on site.
- As in other meetings, the Route 35 intersection was discussed. Several people commented on the short green phase when entering from Route 35. It is difficult to make the turn before the light turns red again, especially for cars behind trucks. This problem could get worse due to the amount of trucks coming from Route 35 and making deliveries to the Maine Turnpike widening project. It was also mentioned that this signal loses power often, resulting in a blinking light, and it has taken a long time to get it functioning each time. A couple of solutions were discussed, including adding a white strobe to the red light. Another is to place a strobe a short distance from the intersection that would indicate when the light was about to turn red.
- Although not mentioned at the Lyman meeting, other towns mentioned the need for left turn lanes at the Route 35 signal and at Kennebunk Pond Road.

Alfred

- The town officials requested that the flashing beacon at Kennebunk Road be replaced with a signal. If a signal is warranted then they would also like to have Saco Road be addressed. There was also a complaint that the utility pole obstructs the view when leaving the road. If a signal is not warranted the town officials would at least like to see an emergency activated traffic signal. The emergency vehicles are located just south of Route 111.
- The town officials requested that Saco Road be “squared up”. Vehicles are exiting Route 111 and traveling just as fast on Saco Road.
- There were requests to also have a protected left turn movement at Route 4 and Route 202 (Recently MDOT had a project to provide protected left turn movements on Route 111). It was also requested to have a right turn lane (by the old Mobile gas station) so that cars approaching the intersection will be able to get by the cars in the queue.
- There were concerns that Route 111 pitches to the left traveling eastbound down Scott’s Hill, causing many vehicles, especially those driven by people unfamiliar

with the road, to drift into the oncoming westbound lane. Heavy vehicles are especially susceptible.

- Consider lowering the speed limit through Alfred, especially for eastbound travelers, on the downgrade towards the intersection of Routes 4, 4A, 111, and 202.
- There were concerns that the intersection of Route 111 with Routes 4 and 202 has inadequate turning radius for emergency vehicles.

Sanford

- City officials had concerns about the lane designation signage or lack of it to the approach of Route 4A/202 and Route 224/Grammar Rd.
- The signal at 4A/202 and Route 224/Grammar Rd. may not be functioning well.
- Although not mentioned at the Sanford meeting, other towns noted the difficulty in the visibility of the signal heads at Route 4A/202 and Route 224/Grammar Rd intersection.

BIDDEFORD
 MAINE TURNPIKE ENT
 D MILES/D OULLETTE/A FRATES/D EMIDY
 2192/2193/2194/2195

MAINE DEPARTMENT OF TRANSPORTATION
 TRAFFIC ENGINEERING

Study Name: BIDDEC
 Site Code : 31050001
 Start Date: 06/19/02
 Page : 3

PASSENGER VEHICLES, SINGLE UNIT TRUCKS, TRACTOR TRAILERS

	MAINE TURNPIKE ENT				SR 111				PRECOURT ST				SR 111				
	From North				From East				From South				From West				
Start																Intvl.	
Time	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Total
Peak Hour Analysis By Entire Intersection for the Period: 06:00 on 06/19/02 to 17:45 on 06/19/02																	
Time	16:45				16:45				16:45				16:45				
Vol.	604	338	421	x	290	638	165	x	109	217	173	x	100	385	288	x	
Pct.	44.3	24.7	30.8	x	26.5	58.3	15.0	x	21.8	43.4	34.6	x	12.9	49.8	37.2	x	
Total	1363				1093				499				773				
High	17:00				17:15				17:00				16:45				
Vol.	177	88	105	x	58	204	37	x	23	73	69	x	25	107	79	x	
Total	370				299				165				211				
PHF	0.920				0.913				0.756				0.915				

PASSENGER VEHICLES
 SINGLE UNIT TRUCK
 TRACTOR TRAILERS

MAINE TURNPIKE ENT

580	327	410	290
16	3	4	217
8	8	7	288
604	338	421	795

Inbound 1363
 Outbound 795
 Total 2158

SR 111

604
1415 638
173

274	
288 10	
4	Inbound 773
	Outbound 1415
385 377	Total 2188
7	
1	

95
100 5
0

Inbound 499
Outbound 603
Total 1102
100 168 210 101
338 5 4 8
165 0 3 0
603 173 217 109
PRECOURT ST

Inbound 1093
Outbound 915
Total 2008
161 4 165
0

109
385 915
421
SR 111

North

MAINE DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

BIDDEFORD
SR 111/SHAWS/IRVING
PERSONNEL: B PELLETIER/J PARADIS
BOARD #'S: 2196/2197

Study Name: BIDDEB
Site Code : 31050083
Start Date: 06/19/02
Page : 4

PASSENGER VEHICLES, SINGLE UNIT TRUCKS, TRACTOR TRAILERS

	SHAWS ENT/EXIT				SR 111				IRVING ENT/EXIT				SR 111				
	From North				From East				From South				From West				
Start																Intvl.	
Time	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Total
Peak Hour Analysis By Entire Intersection for the Period: 06:00 on 06/19/02 to 17:45 on 06/19/02																	
Time	12:00				12:00				12:00				12:00				
Vol.	118	9	87	x	100	0	18	x	41	6	61	x	67	0	87	x	
Pct.	55.1	4.2	40.6	x	84.7	0.0	15.2	x	37.9	5.5	56.4	x	43.5	0.0	56.4	x	
Total	214				118				108				154				
High	12:00				12:45				12:30				12:15				
Vol.	33	3	36	x	31	0	5	x	11	1	20	x	14	0	30	x	
Total	72				36				32				44				
PHF	0.743				0.819				0.843				0.875				

PASSENGER VEHICLES
SINGLE UNIT TRUCK
TRACTOR TRAILERS

SHAWS ENT/EXIT

114	8	83	100
2	0	2	6
2	1	2	87
<hr/>			
118	9	87	193
Inbound	214		
Outbound	193		
Total	407		

SR 111

118
179 61

99
1 100
0

87 84
2
1 Inbound 154
Outbound 179
Total 333
0 0
0

Inbound 118
Outbound 128 18
Total 246 0 18
0

57
67 4
6

41
87 128

Inbound 108
Outbound 94
Total 202

SR 111

1 1

67	52	6	37	0
9	4	0	4	0
18	5	0	0	0
<hr/>				
94	61	6	41	0

IRVING ENT/EXIT

North

BIDDEFORD
 SR 111(ALFRED RD)/WAL-MART/PARK & RIDE
 PERSONNEL:BOB KNOX
 BOARD #'S:2199

MAINE DEPARTMENT OF TRANSPORTATION
 TRAFFIC ENGINEERING

Study Name: BIDDEA
 Site Code : 31050445
 Start Date: 06/19/02
 Page : 4

PASSENGER VEHICLES,SINGLE UNIT TRUCKS,TRACTOR TRAILERS

	PARK & RIDE				SR 111				WAL-MART				SR 111				
	From North				From East				From South				From West				
Start																Intvl.	
Time	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Total
Peak Hour Analysis By Entire Intersection for the Period: 06:00 on 06/19/02 to 17:45 on 06/19/02																	
Time	12:15				12:15				12:15				12:15				
Vol.	1	2	27	x	20	0	247	x	244	4	106	x	96	0	10	x	
Pct.	3.3	6.6	90.0	x	7.4	0.0	92.5	x	68.9	1.1	29.9	x	90.5	0.0	9.4	x	
Total	30				267				354				106				
High	13:00				12:30				12:45				12:15				
Vol.	0	0	13	x	4	0	76	x	84	1	31	x	34	0	2	x	
Total	13				80				116				36				
PHF	0.576				0.834				0.762				0.736				

PASSENGER VEHICLES
 SINGLE UNIT TRUCK
 TRACTOR TRAILERS

PARK & RIDE

1	2	25	20
0	0	2	4
0	0	0	10
1	2	27	34
Inbound			30
Outbound			34
Total			64

SR 111

107 106

10	10		
	0		
	0	Inbound	106
	0	Outbound	107
	0	Total	213
0	0		
	0		

96 96

Inbound	354
Outbound	345
Total	699

96	105	4	238
2	1	0	5
247	0	0	1
345	106	4	244

WAL-MART

17 3 20

Inbound	267		
Outbound	271	241	
Total	538	5	247

244 27 271

SR 111



MAINE DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

BEDDEFORD
SR 111/HOME DEPOT/CHURCH DRIVE
PERSONNEL: STEVE BEAULIEU
BOARD #'S: T-2201

Study Name: BIDDE01
Site Code : 31050446
Start Date: 06/19/02
Page : 4

PASSENGER VEHICLES, SINGLE UNIT TRUCKS, TRACTOR TRAILERS

Start Time	HOME DEPOT ENT/EXIT Southbound				SR 111 Westbound				CHURCH DRIVE Northbound				SR 111 Eastbound				Intvl. Total
	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	
Peak Hour Analysis By Entire Intersection for the Period: 06:00 on 06/19/02 to 17:45 on 06/19/02																	
Time	14:30				14:30				14:30				14:30				
Vol.	45	0	148	x	125	0	7	x	8	0	1	x	0	0	32	x	
Pct.	23.3	0.0	76.6	x	94.6	0.0	5.3	x	88.8	0.0	11.1	x	0.0	0.0	100.0	x	
Total	193				132				9				32				
High	15:00				14:45				15:15				14:45				
Vol.	12	0	43	x	39	0	1	x	3	0	0	x	0	0	9	x	
Total	55				40				3				9				
PHF	0.877				0.825				0.750				0.888				

PASSENGER VEHICLES
SINGLE UNIT TRUCK
TRACTOR TRAILERS

HOME DEPOT ENT/EXIT

45	0	143	125
0	0	3	32
0	0	2	
			157

SR 111

45
46 1

Inbound 193
Outbound 157
Total 350

119
4 125
2

32	32	
0	0	
0	0	Inbound
0	0	Outbound
0	0	Total

32
46
78

Inbound 132
Outbound 156
Total 288

8
148 156

Inbound 9
Outbound 7
Total 16

7	1	0
0	0	0
0	0	0
7	1	0

CHURCH DRIVE

SR 111

8 0
0 0
0 0
8 0
North

MAINE DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

ARUNDEL
SR 111(ALFRED RD)/IR 954/IR 853
PERSONNEL:D MILES/D OUELLETTE
BOARD #'S:1917/1918

Study Name: ARUNAA
Site Code : 31030447
Start Date: 06/21/02
Page : 4

PASSENGER VEHICLES,SINGLE UNIT TRUCKS,TRACTOR TRAILERS

	SR 111 Southbound				IR 954(OLD ALFRED RD) Westbound				IR 853(NEW RD) Northbound				SR 111 Eastbound				Intvl	Exclu	Inclu
Start Time	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Total	Total	Total
Peak Hour Analysis By Entire Intersection for the Period: 06:00 on 06/21/02 to 17:45 on 06/21/02																			
Time	16:30				16:30				16:30				16:30						
Vol.	894	79	10	x	3	5	4	x	2	65	11	x	7	2	612	x			
Pct.	90.9	8.0	1.0	x	25.0	41.6	33.3	x	2.5	83.3	14.1	x	1.1	0.3	98.5	x			
Total	983				12				78				621						
High	17:00				16:45				16:45				16:45						
Vol.	232	20	6	x	2	3	3	x	0	19	6	x	1	1	159	x			
Total	258				8				25				161						
PHF	0.952				0.375				0.780				0.964						

PASSENGER VEHICLES
SINGLE UNIT TRUCK
TRACTOR TRAILERS

SR 111			
862	78	10	3
25	1	0	65
7	0	0	612
=====			
894	79	10	680
Inbound		983	
Outbound		680	
Total		1663	

SR 111

894			
910	5		
	11		
=====			
583			
612	20		
	9	Inbound	621
		Outbound	910
	2	Total	1531
2	0		
	0		
=====			
7	7		
	0		
	0		

Inbound		78	
Outbound		90	
Total		168	
7	10	65	2
79	0	0	0
4	1	0	0
=====		=====	
90	11	65	2

IR 853 (NEW RD)

IR 954 (OLD ALFRED RD)

0	
0	
0	
0	
2	0

North

ARUNDEL

YORK

PERSONNEL: B PELLETIER/J PARADIS

BOARD #'S: 1982/1983

MAINE DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

Study Name: ALFREDBB

Site Code : 31030308

Start Date: 06/21/02

Page : 4

PASSENGER VEHICLES, SINGLE UNIT TRUCKS, TRACTOR TRAILERS

	IR 977(HILL RD) Southbound			SR 111(ALFRED RD) Westbound			SR 111(ALFRED RD) Eastbound			
Start Time	Right	Left	PEDS	Right	Thru	PEDS	Thru	Left	PEDS	Intrvl. Total
Peak Hour Analysis By Entire Intersection for the Period: 06:00 on 06/21/02 to 17:45 on 06/21/02										
Time	16:30			16:30			16:30			
Vol.	3	112	x	269	740	x	518	1	x	
Pct.	2.6	97.3	x	26.6	73.3	x	99.8	0.1	x	
Total	115			1009			519			
High	17:15			16:30			17:15			
Vol.	2	34	x	64	190	x	135	0	x	
Total	36			254			135			
PHF	0.798			0.993			0.961			

PASSENGER VEHICLES
SINGLE UNIT TRUCK
TRACTOR TRAILERS

IR 977(HILL RD)

3	108	269
0	4	1
0	0	
3	112	270

Inbound 115
Outbound 270
Total 385

SR 111(ALFRED RD)

3
743 740

267
2 269
0

718
14 740
8

Inbound 1009
Outbound 630
Total 1639

518
112 630

SR 111(ALFRED RD)



MAINE DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

LYMAN
SR 111(ALFRED RD)/SR 35
PERSONNEL:B KNOX/T FRATES
BOARD #'S:1978/1981

Study Name: LYMANAA
Site Code : 31170453
Start Date: 06/21/02
Page : 4

PASSENGER VEHICLES,SINGLE UNIT TRUCKS,TRACTOR TRAILERS

	SR 35 Southbound				SR 111(ALFRED RD) Westbound				SR 35 Northbound				SR 111(ALFRED RD) Eastbound				Intvl	Exclu	Inclu
Start Time	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Total	Total	Total
Peak Hour Analysis By Entire Intersection for the Period: 06:00 on 06/21/02 to 17:45 on 06/21/02																			
Time	16:30				16:30				16:30				16:30						
Vol.	36	68	54	x	87	548	50	x	38	125	33	x	24	445	66	x			
Pct.	22.7	43.0	34.1	x	12.7	80.0	7.2	x	19.3	63.7	16.8	x	4.4	83.1	12.3	x			
Total	158				685				196				535						
High	17:15				17:15				17:15				16:45						
Vol.	9	23	11	x	35	151	11	x	11	40	9	x	10	103	27	x			
Total	43				197				60				140						
PHF	0.918				0.869				0.816				0.955						

PASSENGER VEHICLES
SINGLE UNIT TRUCK
TRACTOR TRAILERS

SR 35			
36	62	44	87
0	3	7	125
0	3	3	66
36	68	54	278
Inbound		158	
Outbound		278	
Total		436	

SR 111(ALFRED RD)

36			
617	548		
	33		
66	0		
	0	Inbound	535
		Outbound	617
		Total	1152
445	13		
	7		

24	24		
	0		
	0		

Inbound	196		
Outbound	142		
Total	338		
24	29	118	37
68	4	6	1
50	0	1	0
142	33	125	38

SR 35

SR 111(ALFRED RD)

0			
0			
0			
0			
0			
0			
0			

North

LYMAN
 SR 111/ KENNEBUNK POND RD/ DAY RD
 PERSONNEL:S KOUZOUNAS
 BOARD #'S:2380/2381

MAINE DEPARTMENT OF TRANSPORTATION
 TRAFFIC ENGINEERING

Study Name: LYMANBB
 Site Code : 31170454
 Start Date: 06/21/02
 Page : 4

PASSENGER VEHICLES,SINGLE UNIT TRUCKS,TRACTOR TRAILERS

Start	KENNEBUNK POND RD Southbound				SR 111(ALRED RD) Westbound				DAY RD Northbound				SR 111(ALRED RD) Eastbound				Intvl	Exclu	Inclu
Time	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Total	Total	Total
Peak Hour Analysis By Entire Intersection for the Period: 06:00 on 06/21/02 to 17:45 on 06/21/02																			
Time	16:30				16:30				16:30				16:30						
Vol.	14	20	40	x	76	567	8	x	8	40	10	x	8	512	29	x			
Pct.	18.9	27.0	54.0	x	11.6	87.0	1.2	x	13.7	68.9	17.2	x	1.4	93.2	5.2	x			
Total	74				651				58				549						
High	17:00				17:15				17:15				16:45						
Vol.	4	10	13	x	23	151	3	x	2	15	3	x	3	139	5	x			
Total	27				177				20				147						
PHF	0.685				0.919				0.725				0.933						

PASSENGER VEHICLES
 SINGLE UNIT TRUCK
 TRACTOR TRAILERS

KENNEBUNK POND RD

12	20	40	76
2	0	0	40
0	0	0	29
14	20	40	145

Inbound 74
 Outbound 145
 Total 219

SR 111(ALRED RD)

14
 591 567
 10

27
 29 2
 0
 Inbound 549
 Outbound 591
 Total 1140
 512 12
 7

8
 8 0
 0

Inbound 58
 Outbound 36
 Total 94

8 10 40
 20 0 0
 8 0 0
 36 10 40
 DAY RD

SR 111(ALRED RD)

8 0
 0 0
 0 0
 8 0
 North

ALFRED
 SR 111(ALFRED RD) & IR 833(SCHOOL ST)
 PERSONNEL:T FRATES
 BOARD #'S:2193

MAINE DEPARTMENT OF TRANSPORTATION
 TRAFFIC ENGINEERING

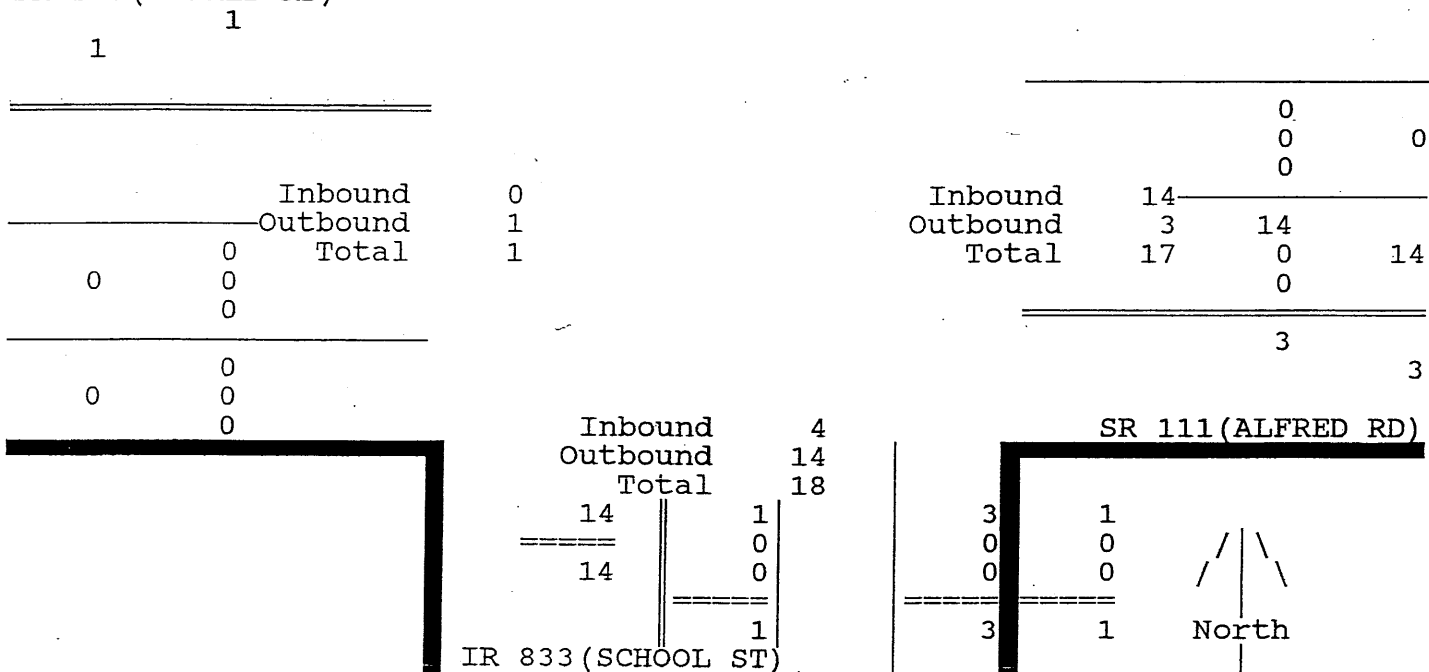
Study Name: ALFRED09
 Site Code : 31020449
 Start Date: 06/26/02
 Page : 4

PASSENGER VEHICLES,SINGLE UNIT TRUCKS,TRACTOR TRAILERS

	SR 111(ALFRED RD)			IR 833(SCHOOL ST)			SR 111(ALFRED RD)			
	Westbound			Northbound			Eastbound			
Start										Intrvl.
Time	Thru	Left	PEDS	Right	Left	PEDS	Right	Thru	PEDS	Total
Peak-Hour Analysis By Entire Intersection for the Period: 06:00 on 06/26/02 to 17:45 on 06/26/02										
Time	17:00			17:00			17:00			
Vol.	0	14	x	3	1	x	0	0	x	
Pct.	0.0	100.0	x	75.0	25.0	x	0.0	0.0	x	
Total	14			4			0			
High	17:45			17:00			17:00			
Vol.	0	8	x	1	1	x	0	0	x	
Total	8			2			0			
PHF	0.437			0.500			0.000			

PASSENGER VEHICLES
 SINGLE UNIT TRUCKS
 TRACTOR TRAILERS

SR 111(ALFRED RD)



MAINE DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

ALFRED
SR 111(ALFRED RD) & SACO ST
PERSONNEL:T FRATES
BOARD #'S:2382/2200

Study Name: ALFRED12
Site Code : 31020448
Start Date: 06/26/02
Page : 4

PASSENGER VEHICLES,SINGLE UNIT TRUCKS,TRACTOR TRAILERS

	SACO ST Southbound			SR 111(ALFRED RD) Westbound			SR 111(ALFRED RD) Eastbound			
Start Time	Right	Left	PEDS	Right	Thru	PEDS	Thru	Left	PEDS	Intrvl. Total
Peak Hour	Analysis By Entire Intersection for the Period: 06:00 on 06/26/02 to 17:45 on 06/26/02									
Time	16:45			16:45			16:45			
Vol.	5	37	x	69	0	x	0	5	x	
Pct.	11.9	88.0	x	100.0	0.0	x	0.0	100.0	x	
Total	42			69			5			
High	16:45			17:30			16:45			
Vol.	2	15	x	25	0	x	0	2	x	
Total	17			25			2			
PHF	0.617			0.690			0.625			

PASSENGER VEHICLES
SINGLE UNIT TRUCK
TRACTOR TRAILERS

SACO ST

SR 111(ALFRED RD)

Inbound
Outbound
Total

Inbound
Outbound
Total

SR 111(ALFRED RD)



MAINE DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

ALFRED
SR 111(ALFRED RD) & KENNEBUNK RD
PERSONNEL:B KNOX,S KOUZOUNAS
BOARD #'S:2198/2199

Study Name: ALFREDBB
Site Code : 31020786
Start Date: 06/26/02
Page : 4

PASSENGER VEHICLES,SINGLE UNIT TRUCKS,TRACTOR TRAILERS

	KENNEBUNK RD				SR 111(ALFRED RD)				KENNEBUNK RD				SR 111(ALFRED RD)						
	Southbound				Westbound				Northbound				Eastbound						
Start																	Intvl	Exclu	Inclu
Time	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Total	Total	Total
Peak Hour Analysis By Entire Intersection for the Period: 06:00 on 06/26/02 to 17:45 on 06/26/02																			
Time	16:00				16:00				16:00				16:00						
Vol.	46	35	24	x	30	501	4	x	6	31	11	x	19	431	31	x			
Pct.	43.8	33.3	22.8	x	5.6	93.6	0.7	x	12.5	64.5	22.9	x	3.9	89.6	6.4	x			
Total	105				535				48				481						
High	16:30				16:30				16:45				16:45						
Vol.	17	7	10	x	14	138	0	x	1	13	2	x	6	117	5	x			
Total	34				152				16				128						
PHF	0.772				0.879				0.750				0.939						

PASSENGER VEHICLES
SINGLE UNIT TRUCK
TRACTOR TRAILERS

KENNEBUNK RD

44	35	22	30
2	0	2	31
0	0	0	31
46	35	24	92

Inbound 105
Outbound 92
Total 197

SR 111(ALFRED RD)

46
558 501
11

30
1
0 Inbound 481
Outbound 558
Total 1039
431 19
12

19
0
0

Inbound 48
Outbound 58
Total 106

19	11	31
35	0	0
4	0	0
58	11	31

KENNEBUNK RD

SR 111(ALFRED RD)

6	0
0	0
0	0
6	0

North

MAINE DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

ALFRED
SR 4/US 202 & SR 111(ALFRED RD)
PERSONNEL:B PELLETIER/J PARADIS
BOARD #'S:2386/2388

Study Name: ALFREDAA
Site Code : 31020433
Start Date: 06/26/02
Page : 4

PASSENGER VEHICLES,SINGLE UNIT TRUCKS,TRACTOR TRAILERS

Start Time	SR 4/US 202 Southbound				SR 111 Westbound				SR 4 Northbound				SR 4A/US 202 Eastbound				Intvl. Total
	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	
Peak Hour Analysis By Entire Intersection for the Period: 06:00 on 06/26/02 to 17:45 on 06/26/02																	
Time	16:15				16:15				16:15				16:15				
Vol.	199	149	12	x	15	454	152	x	157	362	16	x	11	302	221	x	
Pct.	55.2	41.3	3.3	x	2.4	73.1	24.4	x	29.3	67.6	2.9	x	2.0	56.5	41.3	x	
Total	360				621				535				534				
High	16:45				16:30				16:45				17:00				
Vol.	55	46	1	x	5	123	49	x	46	102	6	x	3	84	71	x	
Total	102				177				154				158				
PHF	0.882				0.877				0.868				0.844				

PASSENGER VEHICLES
SINGLE UNIT TRUCK
TRACTOR TRAILERS

SR 4/US 202

190	138	12	15
3	6	0	362
6	5	0	221
1	199	12	598
Inbound	360		
Outbound	598		
Total	958		

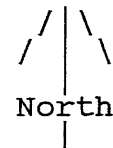
SR 4A/US 202

199			
669	454		
	16		
221	214		
	7		
	0	Inbound	534
		Outbound	669
	289	Total	1203
302	9		
	4		
11	11		
	0		
	0		

Inbound 535
Outbound 312
Total 847

SR 4

11	16	336	147	0
149	0	15	8	0
152	0	11	2	0
312	16	362	157	0



SR 111

MAINE DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING

SANFORD
SR 4A/US 202, SR 224, GRAMMAR RD
PERSONNEL: B PELLETIER, J PARADIS
BOARD #'S: 1915/1916

Study Name: SANFAA
Site Code : 31230050
Start Date: 06/28/02
Page : 4

PASSENGER VEHICLES, SINGLE UNIT TRUCKS, TRACTOR TRAILERS

Start Time	SR 4A/US 202 Southbound				GRAMMAR RD Westbound				SR 4A/US 202 Northbound				SR 224 (SHAW'S RIDGE RD) Eastbound				Intvl. Total
	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	Right	Thru	Left	PEDS	
Peak Hour Analysis By Entire Intersection for the Period: 06:00 on 06/28/02 to 17:45 on 06/28/02																	
Time	16:45				16:45				16:45				16:45				
Vol.	299	413	31	x	34	187	17	x	18	386	31	x	26	78	140	x	
Pct.	40.2	55.5	4.1	x	14.2	78.5	7.1	x	4.1	88.7	7.1	x	10.6	31.9	57.3	x	
Total	743				238				435				244				
High	17:00				17:00				17:00				17:00				
Vol.	75	119	7	x	12	70	5	x	6	108	11	x	12	26	39	x	
Total	201				87				125				77				
PHF	0.924				0.683				0.870				0.792				

PASSENGER VEHICLES
SINGLE UNIT TRUCK
TRACTOR TRAILERS

SR 4A/US 202

1	291	400	31	34
	7	9	0	386
	1	4	0	140
<hr/>				
1	299	413	31	560
	Inbound		743	
	Outbound		560	
	Total		1303	

SR 224 (SHAW'S RIDGE RD)

299				
517	187			
	31			
<hr/>				
140	135			
	3			
	2	Inbound	244	
		Outbound	517	
	77	Total	761	
78	1			
	0			
<hr/>				
	26			
26	0			
	0			

Inbound 435
Outbound 456
Total 891

26	31	373	17	0
413	0	10	1	0
17	0	3	0	0
<hr/>				
456	31	386	18	0

SR 4A/US 202

GRAMMAR RD

North

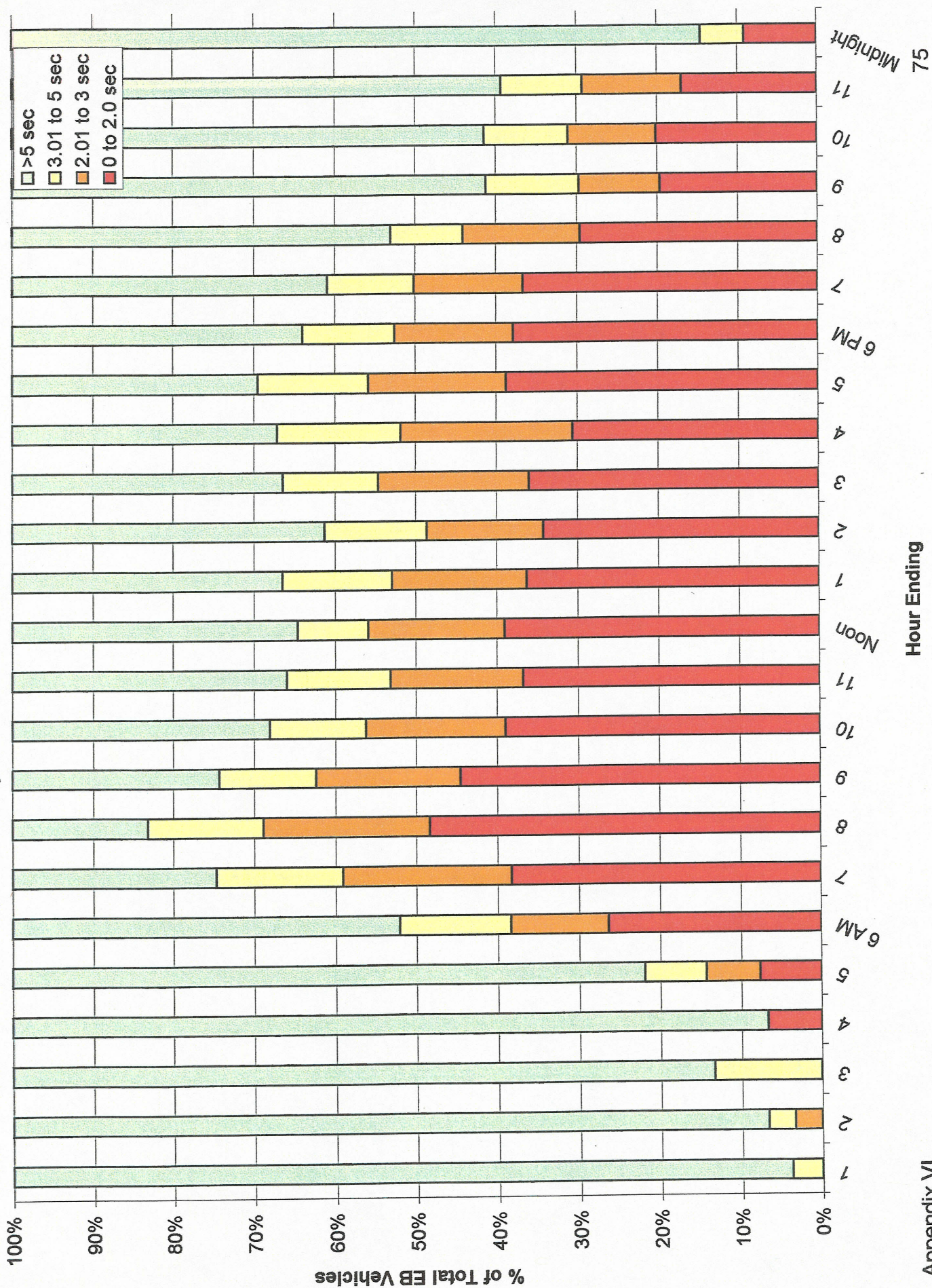
Town	Begin node id	End node id	Begin node location description	End node location description	BMP	EMP	Seg len (mi)	Speed limit (mph)	Shldr type- left	Shldr wid left (ft)	Shldr type- right	Shldr wid right (ft)	Num lanes	Thru lanes- num	Thru lanes- wid (ft)	Lft turn lanes- num	Lft turn lanes- wid (ft)	Rt turn lanes- num	Rt turn lanes- wid (ft)	PCR
Biddeford	3103795	3100950	BID,ALFRED ST,ENT TO WAL-MART	BID,RT E 111,PRECOURT ST	2.41	2.53	0.12	35	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Biddeford	3103795	3110116	BID,ALFRED ST,ENT TO WAL-MART	BID,RT E 111,ENT HOME DEPOT	2.53	2.6	0.07	35	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Biddeford	3103795	3110116	BID,ALFRED ST,ENT TO WAL-MART	BID,RT E 111,ENT HOME DEPOT	2.6	2.67	0.07	35	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Biddeford	3103795	3110116	BID,ALFRED ST,ENT TO WAL-MART	BID,RT E 111,ENT HOME DEPOT	2.67	2.68	0.01	35	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Biddeford	3103795	3110116	BID,ALFRED ST,ENT TO WAL-MART	BID,RT E 111,ENT HOME DEPOT	2.68	2.86	0.18	45	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Biddeford	3103795	3110116	BID,ALFRED ST,ENT TO WAL-MART	BID,RT E 111,ENT HOME DEPOT	2.86	2.87	0.01	45	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Biddeford	3103795	3110116	BID,ALFRED ST,ENT TO WAL-MART	BID,RT E 111,ENT HOME DEPOT	2.87	2.95	0.08	45	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Biddeford	3103795	3110116	BID,ALFRED ST,ENT TO WAL-MART	BID,RT E 111,ENT HOME DEPOT	2.95	3.03	0.08	45	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Biddeford	3103733	3110116	BID,RT E 111,ANDREWS RD	BID,RT E 111,ENT HOME DEPOT	3.03	3.03	0.47	45	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Biddeford	3107382	3107383	TL,ARUNDEL-BIDDEFORD	BID,RT E 111,ANDREWS RD	3.5	3.65	0.15	45	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Biddeford	3107382	3107382	TL,ARUNDEL-BIDDEFORD	BID,RT E 111,ANDREWS RD	3.65	3.78	0.13	45	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Biddeford	3107382	3107382	TL,ARUNDEL-BIDDEFORD	BID,RT E 111,ANDREWS RD	3.78	3.98	0.2	40	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Aundul	3107381	3107382	ARU,RT E 111,OLD ALFRED,NEW RD	TL,ARUNDEL-BIDDEFORD	3.98	4.03	0.05	40	Curb	4	Paved	6	2	2	40	0	0	0	4.53	
Aundul	3107381	3107381	ARU,RT E 111,OLD ALFRED,NEW RD	ARU,RT E 111,OLD ALFRED,NEW RD	4.03	4.06	0.03	40	Curb	4	Paved	6	2	3	40	0	0	0	4.53	
Aundul	3107380	3107381	ARU,RT E 111,DREWS MILL RD	ARU,RT E 111,OLD ALFRED,NEW RD	4.06	4.27	0.21	40	Paved	6	Paved	6	2	2	26	0	0	0	4.53	
Aundul	3107380	3107381	ARU,RT E 111,DREWS MILL RD	ARU,RT E 111,OLD ALFRED,NEW RD	4.27	4.28	0.01	40	Paved	6	Paved	6	2	2	26	0	0	0	4.16	
Aundul	3107380	3107381	ARU,RT E 111,DREWS MILL RD	ARU,RT E 111,DREWS MILL RD	4.28	4.59	0.31	55	Paved	6	Paved	6	2	2	26	0	0	0	4.16	
Aundul	3107379	3107380	ARU,OLD LIMERICK RD,RT E 111	ARU,RT E 111,DREWS MILL RD	4.59	4.88	0.29	55	Paved	6	Paved	6	2	2	26	0	0	0	4.16	
Aundul	3107378	3107379	ARU,OLD LIMERICK RD,RT E 111	ARU,RT E 111,DREWS MILL RD	4.88	5.18	0.3	55	Paved	6	Paved	6	2	2	26	0	0	0	4.16	
Aundul	3107378	3107379	ARU,RT E 111,HILL RD	ARU,OLD LIMERICK RD,RT E 111	5.18	5.49	0.31	55	Paved	6	Paved	6	2	2	26	0	0	0	3.81	
Aundul	3107377	3107378	ARU,RT E 111,TROUT BROOK RD	ARU,RT E 111,HILL RD	5.49	5.93	0.44	55	Paved	6	Paved	6	2	2	26	0	0	0	3.81	
Aundul	3107377	3107378	ARU,RT E 111,TROUT BROOK RD	ARU,RT E 111,HILL RD	5.93	6.1	0.17	55	Paved	6	Paved	6	2	2	26	0	0	0	3.67	
Aundul	3107377	3107378	ARU,RT E 111,TROUT BROOK RD	ARU,RT E 111,HILL RD	6.1	6.71	0.61	55	Paved	6	Paved	6	2	2	26	0	0	0	3.67	
Aundul	3107377	3107378	ARU,RT E 111,TROUT BROOK RD	ARU,RT E 111,HILL RD	6.71	6.87	0.16	55	Paved	6	Paved	6	2	2	26	0	0	0	3.82	
Aundul	3107377	3107377	TL,ARUNDEL-LYMAN	TL,ARUNDEL-LYMAN	6.87	7.04	0.17	55	Paved	6	Paved	6	2	2	26	0	0	0	3.82	
Lyman	3107375	3107376	LYM,RT E 111,RT E 35	ARU,RT E 111,TROUT BROOK RD	7.04	7.32	0.28	55	Paved	6	Paved	6	2	2	22	0	0	0	3.82	
Lyman	3107375	3107376	LYM,RT E 111,RT E 35	TL,ARUNDEL-LYMAN	7.32	7.48	0.16	55	Paved	6	Paved	6	2	2	22	0	0	0	4.13	
Lyman	3107375	3107376	LYM,RT E 111,RT E 35	TL,ARUNDEL-LYMAN	7.48	7.93	0.45	45	Paved	6	Paved	6	2	2	22	0	0	0	4.13	
Lyman	3107375	3107376	LYM,RT E 111,RT E 35	LYM,RT E 111,DAY, KENNEBUNK PD	7.93	8.28	0.35	45	Paved	6	Paved	6	2	2	24	0	0	0	3.52	
Lyman	3107375	3107374	LYM,RT E 111,RT E 35	LYM,RT E 111,DAY, KENNEBUNK PD	8.28	8.53	0.25	55	Paved	6	Paved	6	2	2	24	0	0	0	3.52	
Lyman	3107375	3107374	LYM,RT E 111,RT E 35	LYM,RT E 111,DAY, KENNEBUNK PD	8.53	9.13	0.6	55	Paved	6	Paved	6	2	2	24	0	0	0	3.16	
Lyman	3107375	3107374	LYM,RT E 111,RT E 35	LYM,RT E 111,DAY, KENNEBUNK PD	9.13	9.3	0.17	55	Paved	6	Paved	6	2	2	24	0	0	0	3.14	
Lyman	3107374	3107373	LYM,RT E 111,DAY, KENNEBUNK PD	LYM,RT E 111,HOWITT ST	9.3	9.73	0.43	55	Paved	6	Paved	6	2	2	24	0	0	0	3.14	
Lyman	3107374	3107373	LYM,RT E 111,DAY, KENNEBUNK PD	LYM,RT E 111,HOWITT ST	9.73	10.33	0.6	55	Paved	6	Paved	6	2	2	24	0	0	0	3.14	
Lyman	3107374	3107373	LYM,RT E 111,DAY, KENNEBUNK PD	LYM,RT E 111,HOWITT ST	10.33	10.93	0.57	55	Paved	6	Paved	6	2	2	24	0	0	0	3.32	
Lyman	3107374	3107372	LYM,RT E 111,HOWITT ST	LYM,RT E 111,GRAVES,WALKER RD	10.9	10.93	0.03	55	Paved	6	Paved	6	2	2	24	0	0	0	3.32	
Lyman	3107373	3107372	LYM,RT E 111,HOWITT ST	LYM,RT E 111,GRAVES,WALKER RD	10.93	11.46	0.53	55	Paved	6	Paved	6	2	2	24	0	0	0	3.48	
Lyman	3107372	3107371	LYM,RT E 111,GRAVES,WALKER RD	TL,ALFRED-LYMAN	11.46	11.52	0.06	55	Paved	6	Paved	6	2	2	24	0	0	0	3.88	
Lyman	3107372	3107371	LYM,RT E 111,GRAVES,WALKER RD	TL,ALFRED-LYMAN	11.52	12.02	0.5	55	Paved	6	Paved	6	2	2	24	0	0	0	3.88	
Alfred	3107371	3107370	LYM,RT E 111,GRAVES,WALKER RD	TL,ALFRED-LYMAN	12.02	12.11	0.09	55	Paved	6	Paved	6	2	2	24	0	0	0	3.88	
Alfred	3107371	3107370	TL,ALFRED-LYMAN	ALF,RT 111,DROWN,CLARK,B,B,HLL	12.11	12.42	0.31	55	Paved	6	Paved	6	2	2	24	0	0	0	3.97	
Alfred	3107370	3107369	ALF,RT 111,DROWN,CLARK,B,B,HLL	ALF,RT 111,DROWN,CLARK,B,B,HLL	12.11	12.42	0.31	55	Paved	6	Paved	6	2	2	24	0	0	0	3.97	
Alfred	3107370	3107369	ALF,RT 111,DROWN,CLARK,B,B,HLL	ALF,RT E 111,BACK RD	12.42	12.7	0.28	55	Paved	6	Paved	6	2	2	24	0	0	0	3.68	
Alfred	3107370	3107369	ALF,RT 111,DROWN,CLARK,B,B,HLL	ALF,RT E 111,BACK RD	12.7	12.87	0.17	55	Paved	6	Paved	6	2	2	24	0	0	0	3.68	
Alfred	3107369	3107371	ALF,RT E 111,BACK RD	ALF,RT E 111,BACK RD	12.87	13.15	0.28	55	Paved	6	Paved	6	2	2	24	0	0	0	3.68	
Alfred	3107369	3107371	ALF,RT E 111,BACK RD	ALF,RT E 111,SACO RD	13.15	13.18	0.03	55	Paved	6	Paved	6	2	2	24	0	0	0	3.68	
Alfred	3107369	3107371	ALF,RT E 111,BACK RD	ALF,RT E 111,SACO RD	13.24	13.24	0.06	45	Paved	6	Paved	6	2	2	24	0	0	0	3.68	
Alfred	3107369	3107371	ALF,RT E 111,BACK RD	ALF,RT E 111,SCHOOL ST	13.24	13.27	0.03	45	Paved	6	Paved	6	2	2	24	0	0	0	3.68	
Alfred	3107522	3107368	ALF,RT E 111,SCHOOL ST	ALF,RT E 111,KENNEBUNK RD	13.27	13.29	0.02	45	Paved	6	Paved	6	2	2	24	0	0	0	3.68	
Alfred	3107522	3107368	ALF,RT E 111,SCHOOL ST	ALF,RT E 111,KENNEBUNK RD	13.29	13.47	0.18	45	Paved	6	Paved	6	2	2	24	0	0	0	3.5	
Alfred	3107368	3107367	ALF,RT E 111,KENNEBUNK RD	ALF,RT E 111,KENNEBUNK RD	13.47	13.98	0.41	35	Paved	6	Paved	6	2	2	24	0	0	0	3.5	
Alfred	3107368	3107367	ALF,RT E 111,KENNEBUNK RD	ALF,RT E 4.4A,111	13.47	13.98	0.41	35	Paved	6	Paved	6	2	2	24	0	0	0	3.5	
Alfred	3104076	3107367	ALF,RT E 4.4A,111	ALF,RT E 4.4A,111	16.27	16.39	0.12	35	Paved	6	Paved	6	2	2	24	0	0	0	3.46	
Alfred	3104076	3110034	ALF,RT E 4A,OLD RTE 4	ALF,RT E 4A,STEARNS LA	16.21	16.27	0.06	35	Paved	6	Paved	6	2	2	24	0	0	0	3.46	
Alfred	3104076	3110034	ALF,RT E 4A,OLD RTE 4	ALF,RT E 4A,STEARNS LA	16	16.21	0.21	35	Paved	6	Paved	6	2	2	24	0	0	0	3.46	
Alfred	3104076	3110034	ALF,RT E 4A,OLD RTE 4	ALF,RT E 4A,STEARNS LA	15.81	16	0.19	50	Paved	6	Paved	6	2	2	24	0	0	0	3.54	
Alfred	3107366	3110034	ALF,RT E 4A,BRACKETT HILL RD	ALF,RT E 4A,STEARNS LA	15.66	15.81	0.15	50	Paved	6	Paved	6	2	2	24	0	0	0	3.54	
Alfred	3107366	3107532	ALF,RT E 4A,BRACKETT HILL RD	ALF,RT E 4A,BENNETT RD	15.61	15.66	0.05	50	Paved	6	Paved	6	2	2	24	0	0	0	3.54	
Alfred	3107365	3107532	ALF,RT E 4A,MOUNTAIN RD	ALF,RT E 4A,BENNETT RD	15.32	15.61	0.29	50	Paved	6	Paved	6	2	2	24	0	0	0	3.54	
Alfred	3107365	3107532	ALF,RT E 4A,MOUNTAIN RD	ALF,RT E 4A,BENNETT RD	15.15	15.32	0.17	50	Paved	6	Paved	6	2	2	24	0	0	0	3.69	
Alfred	3107365	3107532	ALF,RT E 4A,MOUNTAIN RD	ALF,RT E 4A,BENNETT RD	15.13	15.15	0.02	50	Paved	6	Paved	6	2	2	24	0	0	0	3.69	
Alfred	3107365	3107532	ALF,RT E 4A,MOUNTAIN RD	ALF,RT E 4A,BENNETT RD	14.78	15.13	0.35	50	Paved	6	Paved	6	2	2	24	0	0	0	3.77	
Alfred	3107365	3107521	ALF,RT E 4A,MOUNTAIN RD	ALF,RT E 4A,BENNETT RD	14.6	14.78	0.18	50	Paved	6	Paved	6	2	2	24	0	0	0	3.77	
Alfred	3107364	3107521	TL,ALFRED-SANFORD	ALF,RT E 4A,JOE CARROLL RD	14.57	14.6	0.03	50	Paved	6	Paved	6	2	2	24	0	0	0	3.77	
Alfred	3107364	3107521	TL,ALFRED-SANFORD	ALF,RT E 4A,JOE CARROLL RD	14.22	14.57	0.35	50	Paved	6	Paved	6	2	2	24	0	0	0	3.61	
Sanford	3107363	3107364	SAN,RT E 4A,RT E 224,RD 801	TL,ALFRED-SANFORD	14.15	14.22	0.07	35	Paved	6	Paved	6	2	2	24	0	0	0	3.61	
Sanford	3107363	3107364	SAN,RT E 4A,RT E 224,RD 801	TL,ALFRED-SANFORD	14.05	14.15	0.1	35	Paved	6	Paved	6	2	2	24	0	0	0	3.61	
Sanford	3107363	3107364	SAN,RT E 4A,RT E 224,RD 801	TL,ALFRED-SANFORD	14.01	14.05	0.04	35	Paved	6	Paved	6	2	2	24	0	0	0	3.61	
Sanford	3107363	3107364	SAN,RT E 4A,RT E 224,RD 801	TL,ALFRED-SANFORD	13.98	14.01	0.03	35	Paved	4	Paved	4	2	2	24	0	1	12	3.53	

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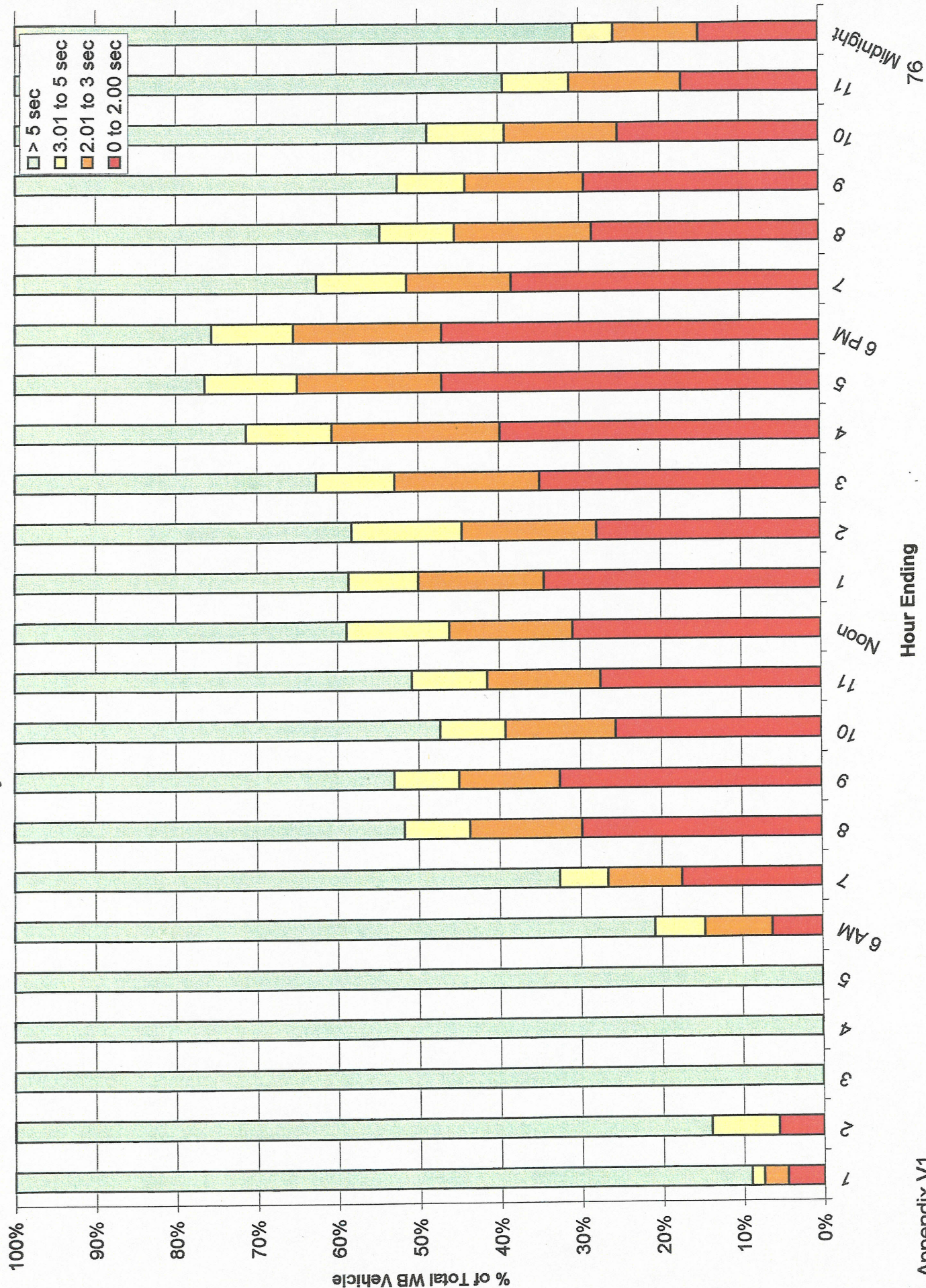
Appendix V

Appendix VI Speed and Headway Summary at New/Old Alfred Road																			
Route 111 Eastbound west of New Road																			
Date	Hour	Hour Ending	Number of Vehicles	85th Percentile Speed (mph)	Average Speed (mph)	Median Speed (mph)	Mode Speed (mph)	Max Speed (mph)	Headway 0 to 2.00 (sec)	Headway 2.01 to 3 (sec)	Headway 3.01 to 5 (sec)	Headway >5 (sec)	Headway % Time Delay (<5 sec old HCM)	Headway % 0 to 2.00	Headway % 2.01 to 3	Headway % 3.01 to 5	Headway % > 5	Headway % 0 to 3	Headway % 0 to 5
6/19/2002	12:00 to 1:00 am	1	27	53.1	49.1	49.0	50.0	56	0	0	1	26	3.7%	0.0%	0.0%	3.7%	96.3%	0.0%	3.7%
6/19/2002	1:00 to 2:00 am	2	30	53.7	49.6	50.0	50.0	68	0	1	1	28	6.7%	0.0%	3.3%	3.3%	93.3%	3.3%	6.7%
6/19/2002	2:00 to 3:00 am	3	15	55.9	49.7	50.0	43.0	59	0	0	2	13	13.3%	0.0%	0.0%	13.3%	86.7%	0.0%	13.3%
6/19/2002	3:00 to 4:00 am	4	30	54.3	46.9	47.0	47.0	63	2	0	0	28	6.7%	6.7%	0.0%	0.0%	93.3%	6.7%	6.7%
6/19/2002	4:00 to 5:00 am	5	105	52.0	46.9	47.0	45.0	61	8	7	8	82	21.9%	7.6%	6.7%	7.6%	78.1%	14.3%	21.9%
6/19/2002	5:00 to 6:00 am	6	292	50.0	45.6	45.5	47.0	56	77	35	40	140	52.1%	26.4%	12.0%	13.7%	47.9%	38.4%	52.1%
6/19/2002	6:00 to 7:00 am	7	719	51.0	46.6	47.0	50.0	63	275	150	112	182	74.7%	38.2%	20.9%	15.6%	25.3%	59.1%	74.7%
6/19/2002	7:00 to 8:00 am	8	950	51.0	46.9	47.0	50.0	58	459	195	136	160	83.2%	48.3%	20.5%	14.3%	16.8%	68.8%	83.2%
6/19/2002	8:00 to 9:00 am	9	669	50.0	45.6	47.0	47.0	58	298	119	80	172	74.3%	44.5%	17.8%	12.0%	25.7%	62.3%	74.3%
6/19/2002	9:00 to 10:00 am	10	516	50.0	46.0	47.0	47.0	59	201	89	61	165	68.0%	39.0%	17.2%	11.8%	32.0%	56.2%	68.0%
6/19/2002	10:00 to 11:00 am	11	493	51.0	46.5	47.0	47.0	60	181	81	63	168	65.9%	36.7%	16.4%	12.8%	34.1%	53.1%	65.9%
6/19/2002	11:00 to 12:00 noon	12	449	51.0	46.4	47.0	47.0	59	175	76	39	159	64.6%	39.0%	16.9%	8.7%	35.4%	55.9%	64.6%
6/19/2002	12:00 to 1:00 pm	13	480	50.0	45.4	46.0	47.0	57	174	80	65	161	66.5%	36.3%	16.7%	13.5%	33.5%	52.9%	66.5%
6/19/2002	1:00 to 2:00 pm	14	457	51.0	46.8	47.0	50.0	59	156	66	58	177	61.3%	34.1%	14.4%	12.7%	38.7%	48.6%	61.3%
6/19/2002	2:00 to 3:00 pm	15	476	49.0	44.5	45.0	44.0	61	171	89	56	160	66.4%	35.9%	18.7%	11.8%	33.6%	54.6%	66.4%
6/19/2002	3:00 to 4:00 pm	16	498	50.0	45.7	46.0	45.0	57	152	106	76	164	67.1%	30.5%	21.3%	15.3%	32.9%	51.8%	67.1%
6/19/2002	4:00 to 5:00 pm	17	537	51.0	46.0	47.0	47.0	61	208	92	73	164	69.5%	38.7%	17.1%	13.6%	30.5%	55.9%	69.5%
6/19/2002	5:00 to 6:00 pm	18	510	51.0	47.2	47.0	47.0	59	193	75	58	184	63.9%	37.8%	14.7%	11.4%	36.1%	52.5%	63.9%
6/19/2002	6:00 to 7:00 pm	19	399	52.0	47.6	48.0	50.0	61	146	54	43	156	60.9%	36.6%	13.5%	10.8%	39.1%	50.1%	60.9%
6/19/2002	7:00 to 8:00 pm	20	311	52.0	47.2	47.0	47.0	60	92	45	28	146	53.1%	29.6%	14.5%	9.0%	46.9%	44.1%	53.1%
6/19/2002	8:00 to 9:00 pm	21	209	51.8	47.6	48.0	50.0	61	41	21	24	123	41.1%	19.6%	10.0%	11.5%	58.9%	29.7%	41.1%
6/19/2002	9:00 to 10:00 pm	22	174	52.0	47.0	47.0	47.0	63	35	19	18	102	41.4%	20.1%	10.9%	10.3%	58.6%	31.0%	41.4%
6/19/2002	10:00 to 11:00 pm	23	130	53.7	48.2	48.0	47.0	63	22	16	13	79	39.2%	16.9%	12.3%	10.0%	60.8%	29.2%	39.2%
6/19/2002	11:00 to 12:00 pm	24	55	54.9	48.8	48.0	44.0	70	5	0	3	47	14.5%	9.1%	0.0%	5.5%	85.5%	9.1%	14.5%
	24 Hour Average			51.7	47.0	47.3	47.3							26.3%	12.3%	10.5%	50.8%		
Route 111 Westbound west of New Road																			
Date	Hour	Hour Ending	Number of Vehicles	85th Percentile Speed (mph)	Average Speed (mph)	Median Speed (mph)	Mode Speed (mph)	Max Speed (mph)	Headway 0 to 2.00 (sec)	Headway 2.01 to 3 (sec)	Headway 3.01 to 5 (sec)	Headway >5 (sec)	Headway % Time Delay (<5 sec old HCM)	Headway % 0 to 2.00	Headway % 2.01 to 3	Headway % 3.01 to 5	Headway % > 5	Headway % 0 to 3	Headway % 0 to 5
6/19/2002	12:00 to 1:00 am	1	67	56.0	51.2	51.0	50.0	61.0	3	2	1	61	9.0%	4.5%	3.0%	1.5%	91.0%	7.5%	9.0%
6/19/2002	1:00 to 2:00 am	2	36	52.8	48.7	49.0	49.0	65.0	2	0	3	31	13.9%	5.6%	0.0%	8.3%	86.1%	5.6%	13.9%
6/19/2002	2:00 to 3:00 am	3	22	48.9	46.3	47.0	47.0	57.0	0	0	0	22	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
6/19/2002	3:00 to 4:00 am	4	18	55.0	50.0	50.5	53.0	58.0	0	0	0	18	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
6/19/2002	4:00 to 5:00 am	5	41	55.0	49.7	50.0	48.0	60.0	0	0	0	41	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
6/19/2002	5:00 to 6:00 am	6	96	53.0	49.6	49.0	50.0	70.0	6	8	6	76	20.8%	6.3%	8.3%	6.3%	79.2%	14.6%	20.8%
6/19/2002	6:00 to 7:00 am	7	218	55.0	50.1	50.0	50.0	67.0	38	20	13	147	32.6%	17.4%	9.2%	6.0%	67.4%	26.6%	32.6%
6/19/2002	7:00 to 8:00 am	8	383	54.0	49.1	50.0	50.0	63.0	114	53	31	185	51.7%	29.8%	13.8%	8.1%	48.3%	43.6%	51.7%
6/19/2002	8:00 to 9:00 am	9	372	53.0	49.3	49.0	50.0	77.0	121	46	30	175	53.0%	32.5%	12.4%	8.1%	47.0%	44.9%	53.0%
6/19/2002	9:00 to 10:00 am	10	324	53.0	49.1	50.0	50.0	67.0	83	44	26	171	47.2%	25.6%	13.6%	8.0%	52.8%	39.2%	47.2%
6/19/2002	10:00 to 11:00 am	11	386	55.0	49.4	49.0	50.0	63.0	106	54	36	190	50.8%	27.5%	14.0%	9.3%	49.2%	41.5%	50.8%
6/19/2002	11:00 to 12:00 noon	12	447	53.0	48.8	49.0	50.0	63.0	138	68	57	184	58.8%	30.9%	15.2%	12.8%	41.2%	46.1%	58.8%
6/19/2002	12:00 to 1:00 pm	13	497	53.0	48.2	49.0	50.0	61.0	171	77	43	206	58.6%	34.4%	15.5%	8.7%	41.4%	49.9%	58.6%
6/19/2002	1:00 to 2:00 pm	14	488	55.0	50.0	50.0	50.0	67.0	136	81	67	204	58.2%	27.9%	16.6%	13.7%	41.8%	44.5%	58.2%
6/19/2002	2:00 to 3:00 pm	15	607	52.0	47.9	48.0	47.0	61.0	212	109	59	227	62.6%	34.9%	18.0%	9.7%	37.4%	52.9%	62.6%
6/19/2002	3:00 to 4:00 pm	16	749	51.0	47.2	47.0	47.0	60.0	298	156	80	215	71.3%	39.8%	20.8%	10.7%	28.7%	60.6%	71.3%
6/19/2002	4:00 to 5:00 pm	17	913	52.2	48.5	49.0	50.0	78.0	429	164	104	216	76.3%	47.0%	18.0%	11.4%	23.7%	65.0%	76.3%
6/19/2002	5:00 to 6:00 pm	18	911	53.0	49.6	50.0	50.0	63.0	428	168	92	223	75.5%	47.0%	18.4%	10.1%	24.5%	65.4%	75.5%
6/19/2002	6:00 to 7:00 pm	19	563	55.0	51.0	51.0	50.0	63.0	216	73	63	211	62.5%	38.4%	13.0%	11.2%	37.5%	51.3%	62.5%
6/19/2002	7:00 to 8:00 pm	20	384	56.0	51.1	51.0	50.0	64.0	109	65	36	174	54.7%	28.4%	16.9%	9.4%	45.3%	45.3%	54.7%
6/19/2002	8:00 to 9:00 pm	21	402	53.0	48.7	49.0	50.0	62.0	118	59	34	191	52.5%	29.4%	14.7%	8.5%	47.5%	44.0%	52.5%
6/19/2002	9:00 to 10:00 pm	22	322	53.0	49.0	49.0	50.0	63.0	81	45	31	165	48.8%	25.2%	14.0%	9.6%	51.2%	39.1%	48.8%
6/19/2002	10:00 to 11:00 pm	23	244	55.0	50.2	50.0	50.0	67.0	42	34	20	148	39.3%	17.2%	13.9%	8.2%	60.7%	31.1%	39.3%
6/19/2002	11:00 to 12:00 pm	24	160	53.0	49.0	49.0	47.0	65.0	24	17	8	111	30.6%	15.0%	10.6%	5.0%	69.4%	25.6%	30.6%
	24 Hour Average			53.5	49.2	49.4	49.5							23.5%	11.7%	7.7%	57.1%		

Headway EB Route 111 West of New Road

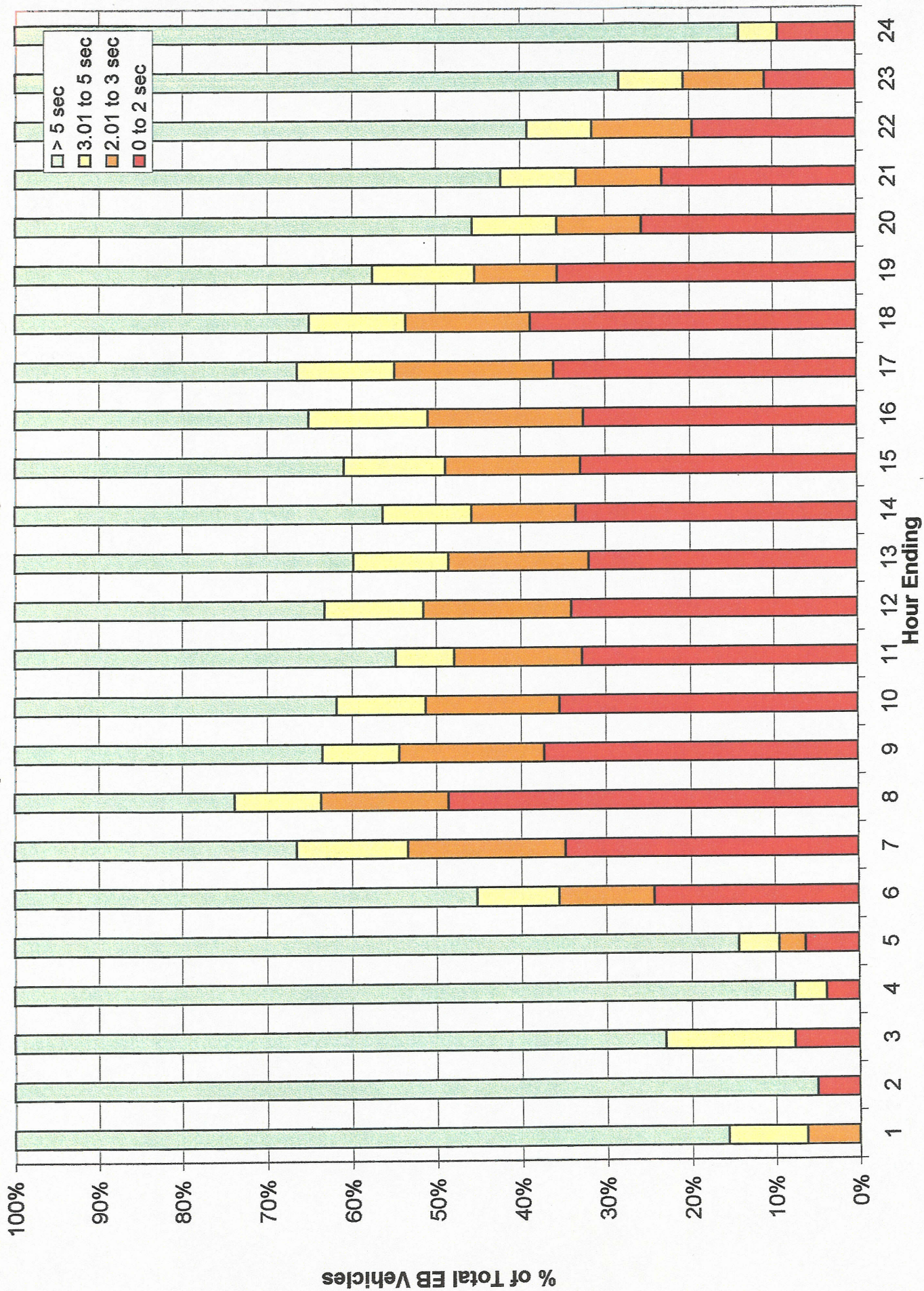


Headway WB Route 111 West of New Road

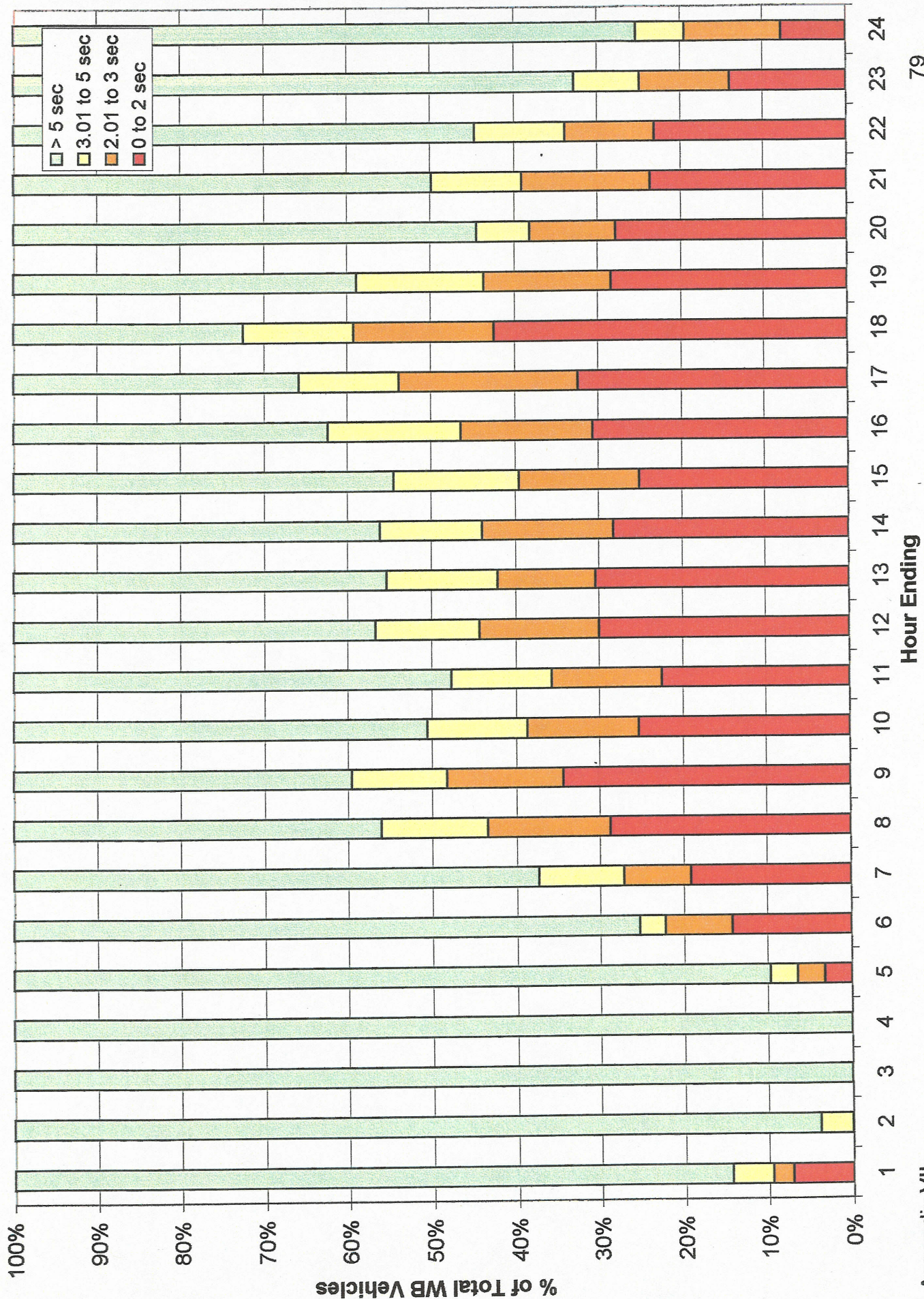


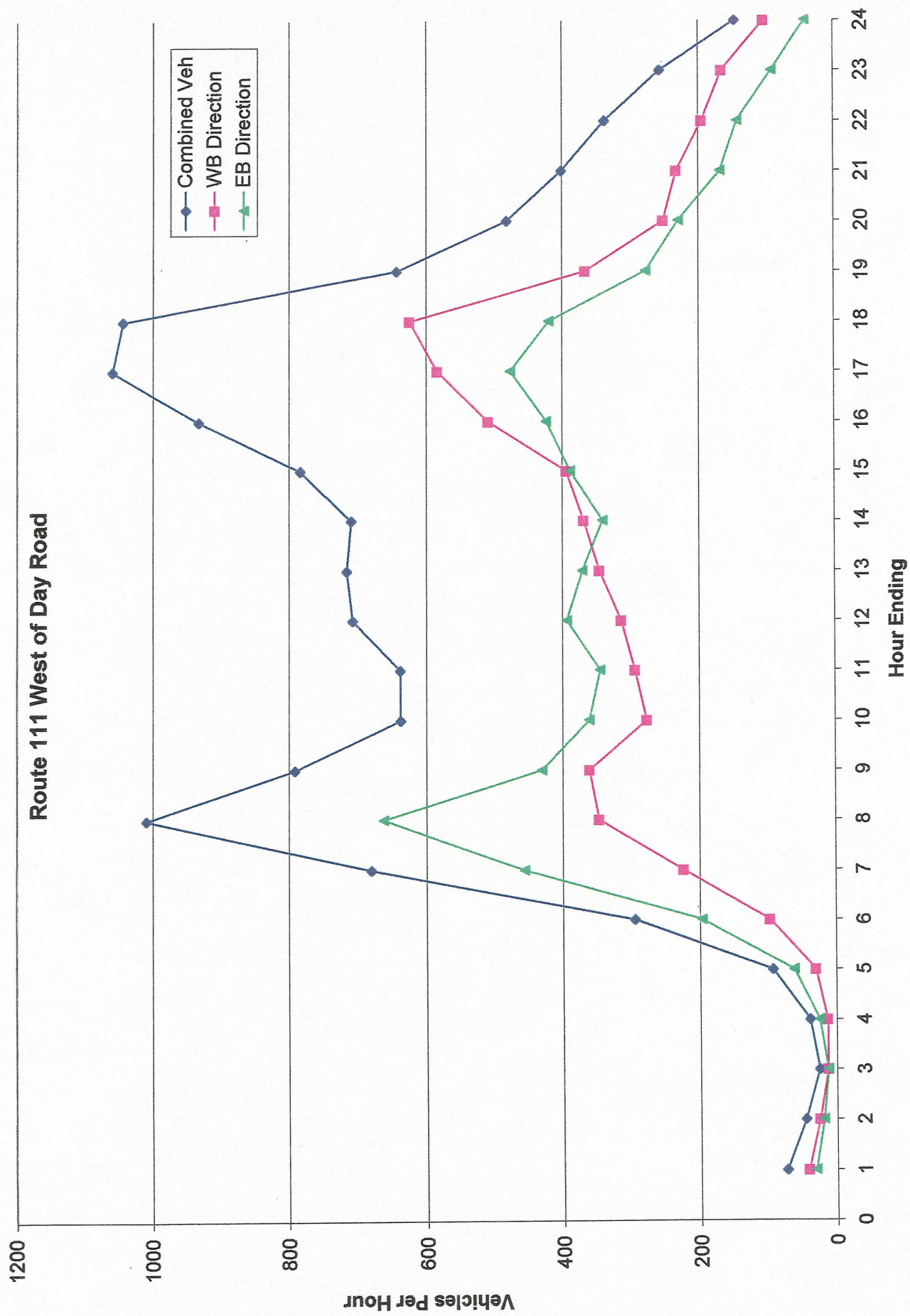
Appendix VII Speed and Headway Summary at Day/Kennebunk Pond Road																			
Route 111 Eastbound west of Day Road																			
Date	Hour	Hour Ending	Number of Vehicles	85th Percentile Speed (mph)	Average Speed (mph)	Median Speed (mph)	Mode Speed (mph)	Max Speed (mph)	Headway 0 to 2.00 (sec)	Headway 2.01 to 3 (sec)	Headway 3.01 to 5 (sec)	Headway >5 (sec)	% Time Delay (<5 sec old HCM)	Headway % 0 to 2.00	Headway % 2.01 to 3	Headway % 3.01 to 5	Headway % > 5	Headway % 0 to 3	Headway % 0 to 5
6/19/2002	12:00 to 1:00 am	1	32	61	57	57	52	83	0	2	3	27	15.6%	0.0%	6.3%	9.4%	84.4%	6.3%	15.6%
6/19/2002	1:00 to 2:00 am	2	20	63	58	59	56	67	1	0	0	19	5.0%	5.0%	0.0%	0.0%	95.0%	5.0%	5.0%
6/19/2002	2:00 to 3:00 am	3	13	63	58	57	53	64	1	0	2	10	23.1%	7.7%	0.0%	15.4%	76.9%	7.7%	23.1%
6/19/2002	3:00 to 4:00 am	4	26	62	58	59	59	71	1	0	1	24	7.7%	3.8%	0.0%	3.8%	92.3%	3.8%	7.7%
6/19/2002	4:00 to 5:00 am	5	63	62	57	57	61	67	4	2	3	54	14.3%	6.3%	3.2%	4.8%	85.7%	9.5%	14.3%
6/19/2002	5:00 to 6:00 am	6	197	61	56	56	56	74	48	22	19	108	45.2%	24.4%	11.2%	9.6%	54.8%	35.5%	45.2%
6/19/2002	6:00 to 7:00 am	7	457	59	56	56	57	73	159	85	60	153	66.5%	34.8%	18.6%	13.1%	33.5%	53.4%	66.5%
6/19/2002	7:00 to 8:00 am	8	663	58	54	55	56	65	323	100	68	174	73.8%	48.6%	15.0%	10.2%	26.2%	63.6%	73.8%
6/19/2002	8:00 to 9:00 am	9	431	58	54	54	56	74	161	74	39	158	63.4%	37.3%	17.1%	9.0%	36.6%	54.4%	63.4%
6/19/2002	9:00 to 10:00 am	10	361	59	54	54	50	67	128	57	38	138	61.8%	35.5%	15.8%	10.5%	38.2%	51.2%	61.8%
6/19/2002	10:00 to 11:00 am	11	345	59	54	54	56	67	113	52	24	156	54.8%	32.8%	15.1%	7.0%	45.2%	47.8%	54.8%
6/19/2002	11:00 to 12:00 noon	12	394	57	52	53	53	70	134	69	46	145	63.2%	34.0%	17.5%	11.7%	36.8%	51.5%	63.2%
6/19/2002	12:00 to 1:00 pm	13	371	57	51	53	56	88	119	62	42	150	59.8%	31.9%	16.6%	11.3%	40.2%	48.5%	59.8%
6/19/2002	1:00 to 2:00 pm	14	341	59	54	55	57	69	114	42	36	149	56.3%	33.4%	12.3%	10.6%	43.7%	45.7%	56.3%
6/19/2002	2:00 to 3:00 pm	15	389	57	51	51	47	64	128	62	47	152	60.9%	32.9%	15.9%	12.1%	39.1%	48.8%	60.9%
6/19/2002	3:00 to 4:00 pm	16	424	56	52	52	55	67	138	78	60	148	65.1%	32.5%	18.4%	14.2%	34.9%	50.9%	65.1%
6/19/2002	4:00 to 5:00 pm	17	477	58	53	53	52	71	172	90	55	160	66.5%	36.1%	18.9%	11.5%	33.5%	54.9%	66.5%
6/19/2002	5:00 to 6:00 pm	18	420	57	52	53	53	66	163	62	48	147	65.0%	38.8%	14.8%	11.4%	35.0%	53.6%	65.0%
6/19/2002	6:00 to 7:00 pm	19	278	59	54	55	55	70	99	27	34	118	57.6%	35.6%	9.7%	12.2%	42.4%	45.3%	57.6%
6/19/2002	7:00 to 8:00 pm	20	230	61	54	55	57	69	59	23	23	125	45.7%	25.7%	10.0%	10.0%	54.3%	35.7%	45.7%
6/19/2002	8:00 to 9:00 pm	21	168	59	53	55	57	67	39	17	15	97	42.3%	23.2%	10.1%	8.9%	57.7%	33.3%	42.3%
6/19/2002	9:00 to 10:00 pm	22	143	60	53	52	51	76	28	17	11	87	39.2%	19.6%	11.9%	7.7%	60.8%	31.5%	39.2%
6/19/2002	10:00 to 11:00 pm	23	92	60	55	56	59	68	10	9	7	66	28.3%	10.9%	9.8%	7.6%	71.7%	20.7%	28.3%
6/19/2002	11:00 to 12:00 pm	24	43	62	57	56	56	68	4	0	2	37	14.0%	9.3%	0.0%	4.7%	86.0%	9.3%	14.0%
	24 Hour Average			59	54	55	55							25.0%	11.2%	9.4%	54.4%		
Route 111 Westbound west of Day Road																			
Date	Hour	Hour Ending	Number of Vehicles	85th Percentile Speed (mph)	Average Speed (mph)	Median Speed (mph)	Mode Speed (mph)	Max Speed (mph)	Headway 0 to 2.00 (sec)	Headway 2.01 to 3 (sec)	Headway 3.01 to 5 (sec)	Headway >5 (sec)	% Time Delay (<5 sec old HCM)	Headway % 0 to 2.00	Headway % 2.01 to 3	Headway % 3.01 to 5	Headway % > 5	Headway % 0 to 3	Headway % 0 to 5
6/19/2002	12:00 to 1:00 am	1	42	57	53.5	54	57	67	3	1	2	36	14.3%	7.1%	2.4%	4.8%	85.7%	9.5%	14.3%
6/19/2002	1:00 to 2:00 am	2	26	59	54.7	55	52	67	0	0	1	25	3.8%	0.0%	0.0%	3.8%	96.2%	0.0%	3.8%
6/19/2002	2:00 to 3:00 am	3	13	55	52.2	51	55	56	0	0	0	13	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
6/19/2002	3:00 to 4:00 am	4	14	57	54.3	55	55	67	0	0	0	14	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
6/19/2002	4:00 to 5:00 am	5	31	56	51.3	52	55	60	1	1	1	28	9.7%	3.2%	3.2%	3.2%	90.3%	6.5%	9.7%
6/19/2002	5:00 to 6:00 am	6	98	56	50.9	52	53	67	14	8	3	74	25.3%	14.1%	8.1%	3.0%	74.7%	22.2%	25.3%
6/19/2002	6:00 to 7:00 am	7	224	56	51.7	52	53	69	43	18	23	141	37.3%	19.1%	8.0%	10.2%	62.7%	27.1%	37.3%
6/19/2002	7:00 to 8:00 am	8	347	56	50.9	51	50	71	100	51	44	153	56.0%	28.7%	14.7%	12.6%	44.0%	43.4%	56.0%
6/19/2002	8:00 to 9:00 am	9	361	55	49.8	51	50	65	124	50	41	146	59.6%	34.3%	13.9%	11.4%	40.4%	48.2%	59.6%
6/19/2002	9:00 to 10:00 am	10	277	55	50.0	50	50	63	70	37	33	137	50.5%	25.3%	13.4%	11.9%	49.5%	38.6%	50.5%
6/19/2002	10:00 to 11:00 am	11	294	55	50.4	52	52	67	66	39	35	154	47.6%	22.4%	13.3%	11.9%	52.4%	35.7%	47.6%
6/19/2002	11:00 to 12:00 noon	12	314	54	49.1	50	50	66	94	45	39	136	56.7%	29.9%	14.3%	12.4%	43.3%	44.3%	56.7%
6/19/2002	12:00 to 1:00 pm	13	346	55	48.1	49	50	63	106	41	46	156	55.3%	30.4%	11.7%	13.2%	44.7%	42.1%	55.3%
6/19/2002	1:00 to 2:00 pm	14	369	55	49.8	50	50	63	104	58	45	162	56.1%	28.2%	15.7%	12.2%	43.9%	43.9%	56.1%
6/19/2002	2:00 to 3:00 pm	15	395	53	48.5	49	50	63	99	57	59	180	54.4%	25.1%	14.4%	14.9%	45.6%	39.5%	54.4%
6/19/2002	3:00 to 4:00 pm	16	509	53	47.7	48	50	63	156	80	81	192	62.3%	30.6%	15.7%	15.9%	37.7%	46.4%	62.3%
6/19/2002	4:00 to 5:00 pm	17	584	54	49.5	50	50	61	189	125	70	200	65.8%	32.4%	21.4%	12.0%	34.2%	53.8%	65.8%
6/19/2002	5:00 to 6:00 pm	18	625	55	50.0	50	50	67	265	105	83	172	72.5%	42.4%	16.8%	13.3%	27.5%	59.2%	72.5%
6/19/2002	6:00 to 7:00 pm	19	366	56	51.6	52	53	66	104	56	56	151	58.9%	28.3%	15.3%	15.3%	41.1%	43.6%	58.9%
6/19/2002	7:00 to 8:00 pm	20	252	56	50.7	52	50	63	70	26	16	140	44.4%	27.8%	10.3%	6.3%	55.6%	38.1%	44.4%
6/19/2002	8:00 to 9:00 pm	21	233	56	50.2	50	50	62	55	36	25	117	49.8%	23.6%	15.5%	10.7%	50.2%	39.1%	49.8%
6/19/2002	9:00 to 10:00 pm	22	195	53	49.4	50	50	63	45	21	21	108	44.6%	23.1%	10.8%	10.8%	55.4%	33.8%	44.6%
6/19/2002	10:00 to 11:00 pm	23	165	55	51.3	52	53	63	23	18	13	111	32.7%	13.9%	10.9%	7.9%	67.3%	24.8%	32.7%
6/19/2002	11:00 to 12:00 pm	24	103	56	52.1	52	55	64	8	12	6	77	25.2%	7.8%	11.7%	5.8%	74.8%	19.4%	25.2%
	24 Hour Average			55	51	51	52							20.7%	10.9%	9.3%	59.0%		

Headway EB Route 111 West of Day Road

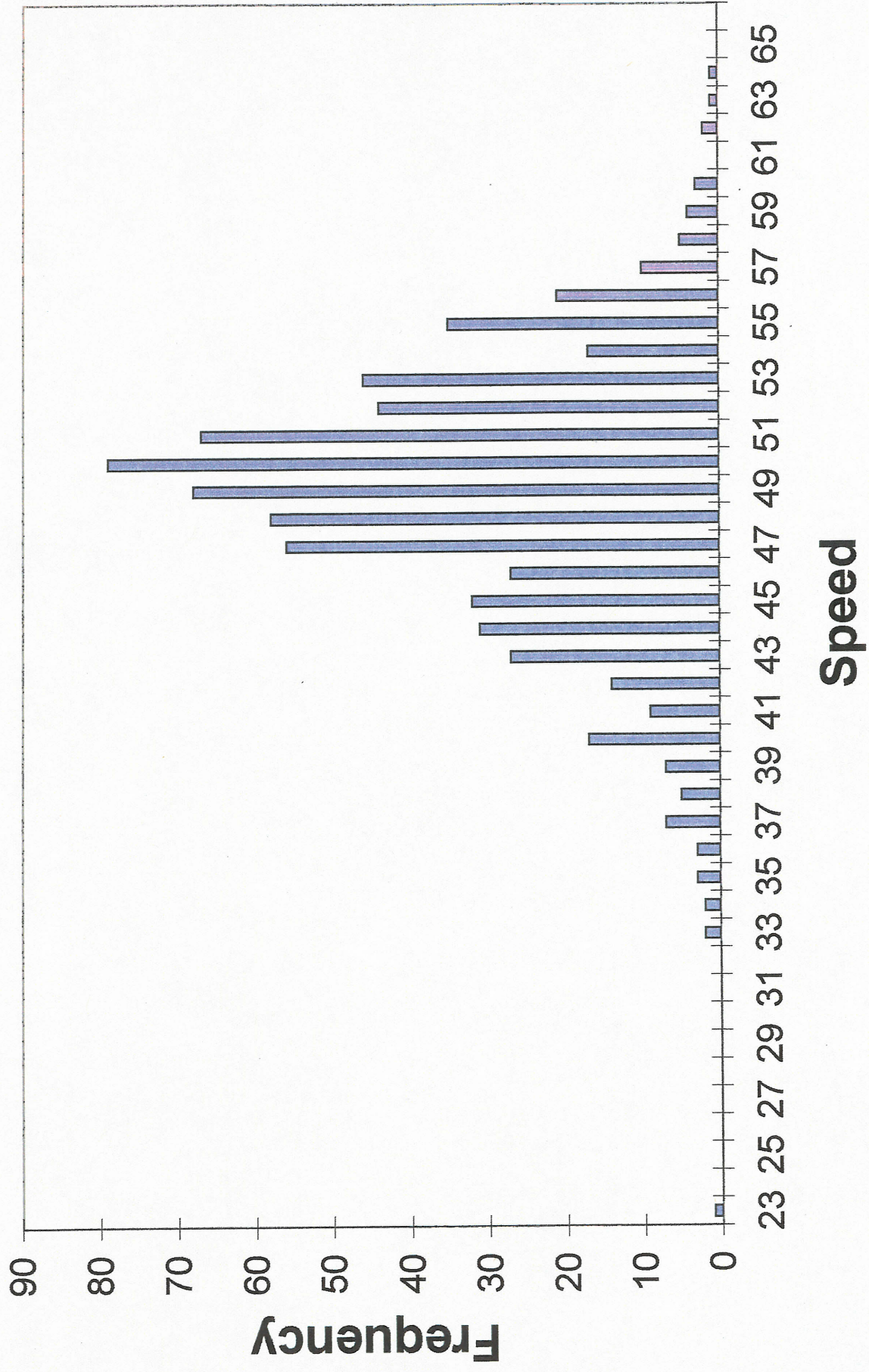


Headway WB Route 111 West of Day Road





Speed Histogram WB 5-6 PM



Appendix VIII Platoon Data for PM Peak west of New/Old Alfred Road

Speed & Headway Data 4 to 5 pm WB of New Road

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:00:05	1	7.006	48					
19/06/02	16:00:12	2	6.993	51					
19/06/02	16:00:14	3	2	51	1	3	2	51	3
19/06/02	16:00:19	4	5.004	50					
19/06/02	16:00:20	5	1.016	52					
19/06/02	16:00:30	6	9.988	48	2	9	8	48	9
19/06/02	16:00:31	7	1.024	46					
19/06/02	16:00:33	8	1.976	48					
19/06/02	16:00:35	9	2.004	46					
19/06/02	16:00:37	10	2.012	42					
19/06/02	16:00:39	11	1.997	43					
19/06/02	16:00:40	12	1.015	45					
19/06/02	16:00:42	13	1.975	47					
19/06/02	16:00:44	14	2.008	44					
19/06/02	16:01:08	15	23.998	44					
19/06/02	16:01:21	16	13	44	3	3	2	44	3
19/06/02	16:01:22	17	1.017	45					
19/06/02	16:01:24	18	1.979	46					
19/06/02	16:01:35	19	10.993	49	4	4	3	49	4
19/06/02	16:01:37	20	2.014	43					
19/06/02	16:01:39	21	1.999	44					
19/06/02	16:01:41	22	2.011	40					
19/06/02	16:01:47	23	5.986	45	5	10	9	45	10
19/06/02	16:01:49	24	1.998	45					
19/06/02	16:01:51	25	2.001	45					
19/06/02	16:01:52	26	0.874	45					
19/06/02	16:01:55	27	3.125	45					
19/06/02	16:01:57	28	1.994	48					
19/06/02	16:01:59	29	1.999	48					
19/06/02	16:02:01	30	2.008	45					
19/06/02	16:02:03	31	1.999	45					
19/06/02	16:02:06	32	2.999	46					
19/06/02	16:02:20	33	13.995	48	6	2	1	48	2
19/06/02	16:02:21	34	1.023	47					
19/06/02	16:02:32	35	10.965	53	7	3	2	53	3
19/06/02	16:02:34	36	2	53					
19/06/02	16:02:35	37	1.024	51					
19/06/02	16:03:02	38	26.978	52	8	4	3	52	4
19/06/02	16:03:04	39	1.998	53					
19/06/02	16:03:05	40	0.914	55					
19/06/02	16:03:10	41	5.071	63					
19/06/02	16:03:20	42	10.025	49					
19/06/02	16:03:32	43	12.001	48					
19/06/02	16:03:38	44	5.984	56					
19/06/02	16:03:43	45	5.009	51	9	2	1	51	2
19/06/02	16:03:44	46	1.021	51					
19/06/02	16:03:57	47	13.014	39	10	7	6	39	7
19/06/02	16:03:58	48	0.95	38					
19/06/02	16:03:59	49	1.084	35					
19/06/02	16:04:02	50	2.963	40					
19/06/02	16:04:04	51	1.997	40					
19/06/02	16:04:05	52	1.028	39					
19/06/02	16:04:09	53	3.946	50					
19/06/02	16:04:25	54	15.992	54					
19/06/02	16:04:37	55	12.018	46	11	5	4	46	5
19/06/02	16:04:39	56	1.999	46					
19/06/02	16:04:42	57	3.018	40					
19/06/02	16:04:44	58	1.988	44					
19/06/02	16:04:45	59	1.016	45					
19/06/02	16:04:54	60	8.97	50	12	11	10	50	11
19/06/02	16:04:56	61	1.998	50					
19/06/02	16:04:58	62	2.003	49					

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:04:59	63	1.023	48					
19/06/02	16:05:01	64	1.972	51					
19/06/02	16:05:02	65	1.019	52					
19/06/02	16:05:04	66	1.985	50					
19/06/02	16:05:05	67	1.023	48					
19/06/02	16:05:06	68	0.955	50					
19/06/02	16:05:08	69	2.024	49					
19/06/02	16:05:09	70	1.014	51					
19/06/02	16:05:16	71	6.978	52	13	16	15	52	16
19/06/02	16:05:17	72	1.028	49					
19/06/02	16:05:18	73	1.022	48					
19/06/02	16:05:23	74	4.96	48					
19/06/02	16:05:26	75	3.002	47					
19/06/02	16:05:29	76	2.999	47					
19/06/02	16:05:31	77	2.003	46					
19/06/02	16:05:32	78	1.023	47					
19/06/02	16:05:34	79	1.971	49					
19/06/02	16:05:36	80	2.001	48					
19/06/02	16:05:39	81	2.995	50					
19/06/02	16:05:42	82	2.998	51					
19/06/02	16:05:44	83	2.006	49					
19/06/02	16:05:48	84	3.996	50					
19/06/02	16:05:51	85	2.995	53					
19/06/02	16:05:54	86	3.002	52					
19/06/02	16:06:05	87	11	52	14	3	2	52	3
19/06/02	16:06:07	88	1.998	53					
19/06/02	16:06:09	89	2.006	50					
19/06/02	16:06:41	90	31.998	51	15	6	5	51	6
19/06/02	16:06:42	91	1.023	50					
19/06/02	16:06:44	92	1.982	49					
19/06/02	16:06:49	93	4.998	50					
19/06/02	16:06:52	94	3.015	44					
19/06/02	16:06:53	95	1.024	42					
19/06/02	16:07:11	96	17.961	50	16	21	20	50	21
19/06/02	16:07:12	97	1.023	48					
19/06/02	16:07:15	98	2.981	48					
19/06/02	16:07:17	99	2.004	46					
19/06/02	16:07:19	100	1.997	47					
19/06/02	16:07:22	101	3.009	44					
19/06/02	16:07:24	102	2.001	44					
19/06/02	16:07:26	103	1.994	46					
19/06/02	16:07:29	104	2.988	51					
19/06/02	16:07:30	105	1.022	50					
19/06/02	16:07:32	106	1.978	51					
19/06/02	16:07:35	107	3.005	49					
19/06/02	16:07:36	108	0.986	50					
19/06/02	16:07:39	109	3.01	50					
19/06/02	16:07:41	110	2.001	50					
19/06/02	16:07:44	111	3.002	49					
19/06/02	16:07:45	112	1.023	48					
19/06/02	16:07:47	113	1.978	49					
19/06/02	16:07:50	114	2.999	49					
19/06/02	16:07:53	115	2.997	50					
19/06/02	16:07:57	116	4.007	47					
19/06/02	16:08:03	117	6.004	46					
19/06/02	16:08:11	118	7.995	48	17	29	28	48	29
19/06/02	16:08:13	119	1.995	50					
19/06/02	16:08:18	120	5.007	47					
19/06/02	16:08:20	121	2.004	45					
19/06/02	16:08:22	122	1.998	46					
19/06/02	16:08:25	123	3.001	46					
19/06/02	16:08:26	124	1.024	44					
19/06/02	16:08:29	125	2.98	44					
19/06/02	16:08:30	126	1.023	43					
19/06/02	16:08:31	127	1.018	44					
19/06/02	16:08:31	128	0.778	43					
19/06/02	16:08:36	129	4.173	47					

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:08:38	130	1.999	48					
19/06/02	16:08:41	131	2.993	51					
19/06/02	16:08:44	132	3.003	50					
19/06/02	16:08:46	133	1.999	50					
19/06/02	16:08:50	134	3.978	63					
19/06/02	16:08:55	135	5.041	43					
19/06/02	16:08:58	136	2.999	43					
19/06/02	0.672917	137	2.002	42					
19/06/02	16:09:01	138	1.01	46					
19/06/02	16:09:03	139	1.969	50					
19/06/02	16:09:04	140	1.031	47					
19/06/02	16:09:07	141	2.977	47					
19/06/02	16:09:10	142	3.005	45					
19/06/02	16:09:11	143	1.025	43					
19/06/02	16:09:12	144	1.032	42					
19/06/02	16:09:12	145	0.766	41					
19/06/02	16:09:17	146	4.148	59					
19/06/02	16:09:36	147	19.018	50	18	10	9	50	10
19/06/02	16:09:37	148	1.019	50					
19/06/02	16:09:39	149	1.969	56					
19/06/02	16:09:41	150	2.002	55					
19/06/02	16:09:44	151	3.012	49					
19/06/02	16:09:45	152	1.015	51					
19/06/02	16:09:47	153	1.973	55					
19/06/02	16:09:52	154	5.005	52					
19/06/02	16:09:53	155	1.021	51					
19/06/02	16:09:55	156	1.982	50					
19/06/02	16:10:16	157	21.014	45	19	7	6	45	7
19/06/02	16:10:19	158	3.001	44					
19/06/02	16:10:22	159	2.991	48					
19/06/02	16:10:23	160	1.015	50					
19/06/02	16:10:25	161	1.988	47					
19/06/02	16:10:27	162	1.998	47					
19/06/02	16:10:30	163	2.995	50					
19/06/02	16:10:46	164	15.996	51	20	4	3	51	4
19/06/02	16:10:48	165	2	51					
19/06/02	16:10:50	166	2.001	51					
19/06/02	16:10:51	167	1.016	53					
19/06/02	16:10:57	168	5.99	48	21	6	5	48	6
19/06/02	16:10:58	169	0.874	47					
19/06/02	16:10:59	170	1.148	50					
19/06/02	16:11:02	171	2.956	60					
19/06/02	16:11:06	172	4.008	55					
19/06/02	16:11:08	173	1.997	57					
19/06/02	16:11:14	174	6.014	50					
19/06/02	16:11:20	175	5.998	50	22	3	2	50	3
19/06/02	16:11:21	176	1.022	50					
19/06/02	16:11:23	177	1.979	50					
19/06/02	16:11:32	178	9.002	49	23	12	11	49	12
19/06/02	16:11:34	179	1.99	54					
19/06/02	16:11:37	180	3.005	51					
19/06/02	16:11:39	181	2	51					
19/06/02	16:11:44	182	4.998	52					
19/06/02	16:11:48	183	3.998	53					
19/06/02	16:11:49	184	1.018	55					
19/06/02	16:11:50	185	1.018	56					
19/06/02	16:11:53	186	2.969	51					
19/06/02	16:11:54	187	1.018	52					
19/06/02	16:11:55	188	1.021	51					
19/06/02	16:11:57	189	1.962	50					
19/06/02	16:12:04	190	7.015	51	24	3	2	51	3
19/06/02	16:12:05	191	1.015	47					
19/06/02	16:12:06	192	0.945	45					
19/06/02	16:12:13	193	7.029	49					
19/06/02	16:12:21	194	7.996	50	25	3	2	50	3
19/06/02	16:12:22	195	0.981	50					
19/06/02	16:12:24	196	2.02	50					

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:12:31	197	6.994	53	26	17	16	53	17
19/06/02	16:12:34	198	3.008	49					
19/06/02	16:12:35	199	1.026	47					
19/06/02	16:12:37	200	1.977	48					
19/06/02	16:12:38	201	1.025	46					
19/06/02	16:12:40	202	1.98	46					
19/06/02	16:12:41	203	1.018	47					
19/06/02	16:12:43	204	1.982	46					
19/06/02	16:12:44	205	1.017	49					
19/06/02	16:12:46	206	1.973	50					
19/06/02	16:12:48	207	1.997	51					
19/06/02	16:12:49	208	1.015	54					
19/06/02	16:12:50	209	0.909	56					
19/06/02	16:12:52	210	2.063	59					
19/06/02	16:12:55	211	2.998	60					
19/06/02	16:12:59	212	4.012	53					
19/06/02	0.675694	213	1.01	51					
19/06/02	16:13:13	214	12.996	50	27	3	2	50	3
19/06/02	16:13:15	215	2.002	49					
19/06/02	16:13:23	216	8	49					
19/06/02	16:13:43	217	19.987	56	28	5	4	56	5
19/06/02	16:13:45	218	2.003	54					
19/06/02	16:13:48	219	3.003	52					
19/06/02	16:13:50	220	2.001	52					
19/06/02	16:13:51	221	1.022	51					
19/06/02	16:13:57	222	5.986	48	29	3	2	48	3
19/06/02	0.676389	223	3.005	46					
19/06/02	16:14:02	224	1.995	48					
19/06/02	16:14:32	225	29.993	51	30	3	2	51	3
19/06/02	16:14:33	226	1.022	51					
19/06/02	16:14:34	227	1.018	52					
19/06/02	16:14:40	228	5.954	55					
19/06/02	16:14:45	229	5	55	31	6	5	55	6
19/06/02	16:14:47	230	2.009	50					
19/06/02	16:14:48	231	1.018	51					
19/06/02	16:14:50	232	1.98	51					
19/06/02	16:14:52	233	2.006	48					
19/06/02	16:14:52	234	0.826	48					
19/06/02	16:14:59	235	6.131	78					
19/06/02	16:15:02	236	3.093	33					
19/06/02	16:15:09	237	6.954	47	32	3	2	47	3
19/06/02	16:15:13	238	3.986	53					
19/06/02	16:15:16	239	2.994	56					
19/06/02	16:15:25	240	9.01	51	33	2	1	51	2
19/06/02	16:15:26	241	1.021	50					
19/06/02	16:15:32	242	5.976	52	34	3	2	52	3
19/06/02	16:15:33	243	0.951	51					
19/06/02	16:15:34	244	0.922	52					
19/06/02	16:15:47	245	13.12	56					
19/06/02	16:15:57	246	10.008	52	35	12	11	52	12
19/06/02	16:16:01	247	4.001	51					
19/06/02	16:16:04	248	3.001	51					
19/06/02	16:16:06	249	2.006	48					
19/06/02	16:16:07	250	1.015	50					
19/06/02	16:16:12	251	4.973	54					
19/06/02	16:16:14	252	1.999	55					
19/06/02	16:16:17	253	3.004	52					
19/06/02	16:16:22	254	5.004	50					
19/06/02	16:16:23	255	0.985	48					
19/06/02	16:16:24	256	1.046	46					
19/06/02	16:16:25	257	1.018	47					
19/06/02	16:16:31	258	5.954	49	36	3	2	49	3
19/06/02	16:16:33	259	1.998	50					
19/06/02	16:16:35	260	1.996	52					
19/06/02	16:16:44	261	9.013	46	37	2	1	46	2
19/06/02	16:16:47	262	3.016	41					
19/06/02	16:17:01	263	13.96	58	38	2	1	58	2

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:17:04	264	3.008	53					
19/06/02	16:17:12	265	8.009	49	39	5	4	49	5
19/06/02	16:17:14	266	2.002	48					
19/06/02	16:17:15	267	1.027	46					
19/06/02	16:17:17	268	1.973	48					
19/06/02	16:17:20	269	2.997	50					
19/06/02	16:17:26	270	5.996	51	40	9	8	51	9
19/06/02	16:17:29	271	2.989	57					
19/06/02	16:17:33	272	4.012	51					
19/06/02	16:17:36	273	3.009	47					
19/06/02	16:17:37	274	1.021	47					
19/06/02	16:17:39	275	1.988	44					
19/06/02	16:17:39	276	0.746	44					
19/06/02	16:17:43	277	3.243	48					
19/06/02	16:17:48	278	4.997	49					
19/06/02	16:18:02	279	#VALUE!	42					
19/06/02	16:18:16	280	27.994	52					
19/06/02	16:18:33	281	17	52					
19/06/02	16:18:38	282	5.006	49					
19/06/02	16:18:59	283	21.009	45	41	25	24	45	25
19/06/02	0.679861	284	1.021	45					
19/06/02	16:19:01	285	1.007	43					
19/06/02	16:19:03	286	1.985	41					
19/06/02	16:19:04	287	1.023	40					
19/06/02	16:19:07	288	2.97	43					
19/06/02	16:19:09	289	1.998	44					
19/06/02	16:19:10	290	1.02	44					
19/06/02	16:19:13	291	2.967	49					
19/06/02	16:19:14	292	1.029	45					
19/06/02	16:19:17	293	2.992	41					
19/06/02	16:19:18	294	1.021	41					
19/06/02	16:19:19	295	0.956	44					
19/06/02	16:19:21	296	2.01	46					
19/06/02	16:19:23	297	1.998	47					
19/06/02	16:19:26	298	2.993	50					
19/06/02	16:19:28	299	2	50					
19/06/02	16:19:30	300	2	50					
19/06/02	16:19:32	301	1.988	56					
19/06/02	16:19:34	302	2.007	52					
19/06/02	16:19:39	303	5.008	48					
19/06/02	16:19:43	304	3.995	50					
19/06/02	16:19:46	305	2.999	51					
19/06/02	16:19:48	306	2.007	48					
19/06/02	16:19:49	307	1.029	46					
19/06/02	16:20:04	308	14.972	47	42	22	21	47	22
19/06/02	16:20:05	309	1.021	47					
19/06/02	16:20:08	310	2.984	45					
19/06/02	16:20:09	311	1.021	45					
19/06/02	16:20:12	312	2.996	40					
19/06/02	16:20:13	313	1.026	38					
19/06/02	16:20:15	314	1.981	38					
19/06/02	16:20:18	315	2.989	41					
19/06/02	16:20:20	316	1.993	43					
19/06/02	16:20:21	317	1.018	44					
19/06/02	16:20:23	318	1.989	41					
19/06/02	16:20:24	319	1.016	42					
19/06/02	16:20:26	320	1.986	40					
19/06/02	16:20:28	321	1.994	42					
19/06/02	16:20:29	322	1.009	46					
19/06/02	16:20:31	323	1.975	48					
19/06/02	16:20:34	324	2.999	49					
19/06/02	16:20:35	325	1.024	47					
19/06/02	16:20:36	326	1.021	47					
19/06/02	16:20:39	327	2.96	47					
19/06/02	16:20:41	328	1.998	47					
19/06/02	16:20:44	329	2.993	50					
19/06/02	16:20:50	330	6.017	44					

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:21:03	331	13.038	33	43	3	2	33	3
19/06/02	16:21:06	332	3.006	32					
19/06/02	16:21:08	333	1.987	35					
19/06/02	16:21:23	334	14.95	51					
19/06/02	16:21:32	335	9.014	45					
19/06/02	16:21:56	336	23.994	48	44	24	23	48	24
19/06/02	16:21:58	337	1.995	50					
19/06/02	0.681944	338	1.999	50					
19/06/02	16:22:02	339	2.003	49					
19/06/02	16:22:05	340	3.009	45					
19/06/02	16:22:07	341	2.009	42					
19/06/02	16:22:09	342	2.002	42					
19/06/02	16:22:11	343	2.007	40					
19/06/02	16:22:12	344	1.019	40					
19/06/02	16:22:13	345	1.026	39					
19/06/02	16:22:14	346	1.023	38					
19/06/02	16:22:16	347	1.939	38					
19/06/02	16:22:19	348	2.982	43					
19/06/02	16:22:20	349	1.021	43					
19/06/02	16:22:23	350	2.975	44					
19/06/02	16:22:25	351	2.006	42					
19/06/02	16:22:29	352	4.004	41					
19/06/02	16:22:31	353	2.003	40					
19/06/02	16:22:32	354	0.875	39					
19/06/02	16:22:34	355	2.126	40					
19/06/02	16:22:39	356	4.976	48					
19/06/02	16:22:43	357	4.002	47					
19/06/02	16:22:44	358	1.017	48					
19/06/02	16:22:45	359	1.002	48					
19/06/02	16:22:53	360	7.985	46	45	2	1	46	2
19/06/02	16:22:55	361	2.006	44					
19/06/02	16:23:04	362	8.99	47	46	4	3	47	4
19/06/02	16:23:05	363	1.028	44					
19/06/02	16:23:06	364	1.02	44					
19/06/02	16:23:08	365	1.956	46					
19/06/02	16:23:19	366	10.991	50	47	4	3	50	4
19/06/02	16:23:22	367	3.002	49					
19/06/02	16:23:26	368	3.988	55					
19/06/02	16:23:31	369	4.998	56					
19/06/02	16:23:42	370	11.006	52	48	2	1	52	2
19/06/02	16:23:43	371	1.023	51					
19/06/02	0.683333	372	16.985	49					
19/06/02	16:24:05	373	5.01	45	49	2	1	45	2
19/06/02	16:24:07	374	1.997	46					
19/06/02	16:24:23	375	16.001	45	50	8	7	45	8
19/06/02	16:24:25	376	2.017	40					
19/06/02	16:24:27	377	2.007	38					
19/06/02	16:24:28	378	1.024	37					
19/06/02	16:24:30	379	1.982	36					
19/06/02	16:24:31	380	1.017	37					
19/06/02	16:24:33	381	1.971	40					
19/06/02	16:24:35	382	2.039	31					
19/06/02	16:24:45	383	9.952	42					
19/06/02	16:25:07	384	21.981	50					
19/06/02	16:25:14	385	7.016	43					
19/06/02	16:25:19	386	4.981	51	51	4	3	51	4
19/06/02	16:25:21	387	2	51					
19/06/02	16:25:23	388	2	51					
19/06/02	16:25:25	389	1.996	53					
19/06/02	16:25:36	390	10.999	53					
19/06/02	16:25:39	391	3.011	48					
19/06/02	16:25:43	392	4.028	39	52	9	8	39	9
19/06/02	16:25:45	393	2.009	36					
19/06/02	16:25:46	394	1.022	36					
19/06/02	16:25:48	395	1.979	36					
19/06/02	16:25:50	396	1.987	40					
19/06/02	16:25:52	397	1.991	42					

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:25:55	398	3.024	36					
19/06/02	16:25:57	399	1.997	36					
19/06/02	16:25:58	400	1.023	36					
19/06/02	16:26:11	401	12.929	53	53	6	5	53	6
19/06/02	16:26:14	402	3.004	51					
19/06/02	16:26:17	403	2.997	53					
19/06/02	16:26:21	404	4	53					
19/06/02	16:26:23	405	1.996	55					
19/06/02	16:26:25	406	2.005	52					
19/06/02	16:26:39	407	14.029	41					
19/06/02	16:27:10	408	30.964	56	54	9	8	56	9
19/06/02	16:27:10	409	0.766	57					
19/06/02	16:27:13	410	2.24	53					
19/06/02	16:27:16	411	3.013	47					
19/06/02	16:27:18	412	2	47					
19/06/02	16:27:19	413	1.021	47					
19/06/02	16:27:20	414	0.98	47					
19/06/02	16:27:21	415	1.042	45					
19/06/02	16:27:22	416	0.99	43					
19/06/02	16:27:28	417	5.973	45					
19/06/02	16:27:38	418	9.993	47					
19/06/02	16:27:42	419	3.98	57					
19/06/02	16:28:03	420	21.034	42	55	8	7	42	8
19/06/02	16:28:04	421	1.012	43					
19/06/02	16:28:06	422	1.996	40					
19/06/02	16:28:07	423	1.02	40					
19/06/02	16:28:09	424	1.969	43					
19/06/02	16:28:11	425	1.997	44					
19/06/02	16:28:13	426	1.999	45					
19/06/02	16:28:15	427	2.001	44					
19/06/02	16:28:25	428	10.003	43	56	15	14	43	15
19/06/02	16:28:27	429	2.006	41					
19/06/02	16:28:29	430	1.998	42					
19/06/02	16:28:30	431	1.017	43					
19/06/02	16:28:32	432	1.981	43					
19/06/02	16:28:34	433	1.996	44					
19/06/02	16:28:36	434	1.997	45					
19/06/02	16:28:40	435	3.988	50					
19/06/02	16:28:45	436	4.994	53					
19/06/02	16:28:49	437	4.011	48					
19/06/02	16:28:50	438	1.023	47					
19/06/02	16:28:54	439	3.97	51					
19/06/02	16:28:55	440	1.018	52					
19/06/02	16:28:55	441	0.803	55					
19/06/02	16:28:58	442	2.174	53					
19/06/02	16:29:06	443	8.01	49	57	2	1	49	2
19/06/02	16:29:07	444	1.017	50					
19/06/02	16:29:21	445	13.981	50	58	7	6	50	7
19/06/02	16:29:26	446	4.997	51					
19/06/02	16:29:27	447	0.972	52					
19/06/02	16:29:30	448	3.027	51					
19/06/02	16:29:34	449	3.992	56					
19/06/02	16:29:38	450	4	56					
19/06/02	16:29:41	451	3.006	52					
19/06/02	16:30:04	452	23.002	51	59	4	3	51	4
19/06/02	16:30:05	453	1.024	50					
19/06/02	16:30:08	454	2.973	53					
19/06/02	16:30:09	455	1.019	53					
19/06/02	16:30:19	456	9.986	50					
19/06/02	16:30:28	457	9.009	47	60	5	4	47	5
19/06/02	16:30:30	458	2.003	45					
19/06/02	16:30:35	459	5	45					
19/06/02	16:30:36	460	1.026	43					
19/06/02	16:30:41	461	4.988	48					
19/06/02	16:30:47	462	5.983	56					
19/06/02	16:30:50	463	3.021	46	61	2	1	46	2
19/06/02	16:30:50	464	0.812	47					

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:30:56	465	5.181	49					
19/06/02	16:30:57	466	1.027	46	62	4	3	46	4
19/06/02	16:30:59	467	1.983	45					
19/06/02	16:31:01	468	2.003	44					
19/06/02	16:31:03	469	2.005	42					
19/06/02	16:31:09	470	5.985	48					
19/06/02	16:31:15	471	5.992	51	63	2	1	51	2
19/06/02	16:31:17	472	2.004	50					
19/06/02	16:31:39	473	21.993	53					
19/06/02	16:31:52	474	12.993	57					
19/06/02	16:31:58	475	6.011	51					
19/06/02	16:32:03	476	5.001	50	64	4	3	50	4
19/06/02	16:32:04	477	1.021	50					
19/06/02	16:32:07	478	2.976	52					
19/06/02	16:32:11	479	3.99	57					
19/06/02	16:32:19	480	8.008	53	65	8	7	53	8
19/06/02	16:32:23	481	4.001	52					
19/06/02	16:32:27	482	4	52					
19/06/02	16:32:31	483	3.997	54					
19/06/02	16:32:32	484	1.019	55					
19/06/02	16:32:34	485	1.986	51					
19/06/02	16:32:35	486	1.023	50					
19/06/02	16:32:37	487	1.973	53					
19/06/02	16:32:52	488	15.015	47	66	5	4	47	5
19/06/02	16:32:53	489	0.992	45					
19/06/02	16:32:55	490	2.017	43					
19/06/02	16:32:59	491	3.984	50					
19/06/02	16:33:02	492	3.006	47					
19/06/02	16:33:10	493	8.05	33					
19/06/02	16:33:24	494	13.944	50					
19/06/02	16:33:28	495	4.008	46	67	2		46	2
19/06/02	16:33:30	496	2.003	45					
19/06/02	16:33:39	497	8.991	49	68	16	15	49	16
19/06/02	16:33:40	498	1.021	48					
19/06/02	16:33:42	499	1.984	47					
19/06/02	16:33:43	500	1.022	46					
19/06/02	16:33:45	501	1.978	47					
19/06/02	16:33:48	502	2.989	51					
19/06/02	16:33:50	503	2.001	51					
19/06/02	16:33:52	504	2.008	47					
19/06/02	16:33:54	505	1.998	48					
19/06/02	16:33:55	506	1.023	47					
19/06/02	16:33:58	507	2.969	52					
19/06/02	0.690278	508	2	52					
19/06/02	16:34:05	509	5.007	49					
19/06/02	16:34:06	510	1.024	49					
19/06/02	16:34:07	511	1.025	47					
19/06/02	16:34:08	512	0.858	47					
19/06/02	16:34:18	513	10.105	44	69	4	3	44	4
19/06/02	16:34:20	514	1.993	47					
19/06/02	16:34:23	515	2.988	52					
19/06/02	16:34:28	516	5	52					
19/06/02	16:34:38	517	10.008	48	70	3	2	48	3
19/06/02	16:34:39	518	1.02	48					
19/06/02	16:34:40	519	1.022	47					
19/06/02	16:34:59	520	18.945	55	71	6	5	55	6
19/06/02	0.690972	521	1.019	55					
19/06/02	16:35:02	522	1.985	52					
19/06/02	16:35:06	523	3.987	60					
19/06/02	16:35:08	524	2.003	58					
19/06/02	16:35:12	525	4.01	52					
19/06/02	16:35:29	526	17.01	48					
19/06/02	16:35:41	527	12.013	43	72	14	13	43	14
19/06/02	16:35:43	528	1.994	45					
19/06/02	16:35:47	529	3.997	46					
19/06/02	16:35:49	530	1.997	47					
19/06/02	16:35:51	531	1.997	49					

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:35:51	532	0.797	48					
19/06/02	16:35:53	533	1.202	49					
19/06/02	16:35:54	534	1.026	47					
19/06/02	16:35:56	535	1.98	47					
19/06/02	16:35:57	536	1.013	50					
19/06/02	16:35:59	537	1.98	50					
19/06/02	16:36:01	538	1.994	52					
19/06/02	16:36:04	539	2.999	53					
19/06/02	16:36:05	540	0.993	50					
19/06/02	16:36:19	541	14.006	53	73	3	2	53	3
19/06/02	16:36:23	542	3.996	56					
19/06/02	16:36:28	543	5.001	55					
19/06/02	16:36:35	544	7.044	38					
19/06/02	16:36:41	545	5.979	45	74	2	1	45	2
19/06/02	16:36:43	546	2.004	43					
19/06/02	16:36:52	547	8.997	44	75	5	4	44	5
19/06/02	16:36:53	548	1.021	44					
19/06/02	16:36:55	549	1.978	45					
19/06/02	16:36:59	550	3.985	51					
19/06/02	16:37:01	551	1.991	56					
19/06/02	16:37:08	552	7.007	52					
19/06/02	16:37:50	553	42.022	43					
19/06/02	16:38:03	554	12.989	47	76	6	5	47	6
19/06/02	16:38:04	555	0.842	45					
19/06/02	16:38:04	556	0.874	44					
19/06/02	16:38:06	557	1.29	45					
19/06/02	16:38:11	558	4.989	49					
19/06/02	16:38:16	559	5.005	47					
19/06/02	16:38:23	560	6.995	49	77	30	29	49	30
19/06/02	16:38:24	561	0.917	51					
19/06/02	16:38:26	562	2.076	52					
19/06/02	16:38:29	563	3.003	51					
19/06/02	16:38:30	564	1.02	51					
19/06/02	16:38:32	565	1.979	51					
19/06/02	16:38:33	566	1.02	51					
19/06/02	16:38:38	567	4.981	51					
19/06/02	16:38:38	568	0.776	49					
19/06/02	16:38:42	569	3.233	47					
19/06/02	16:38:43	570	0.946	46					
19/06/02	16:38:45	571	2.051	48					
19/06/02	16:38:46	572	0.964	49					
19/06/02	16:38:48	573	2.03	51					
19/06/02	16:38:49	574	1.019	51					
19/06/02	16:38:54	575	4.982	50					
19/06/02	16:38:59	576	5.012	45					
19/06/02	16:39:00	577	1.428	46					
19/06/02	16:39:02	578	1.569	47					
19/06/02	16:39:03	579	1.02	47					
19/06/02	16:39:04	580	0.964	46					
19/06/02	16:39:08	581	4.012	48					
19/06/02	16:39:11	582	2.998	49					
19/06/02	16:39:13	583	2	49					
19/06/02	16:39:16	584	2.997	50					
19/06/02	16:39:21	585	5.012	45					
19/06/02	16:39:22	586	1.018	46					
19/06/02	16:39:24	587	1.972	50					
19/06/02	16:39:26	588	2.004	48					
19/06/02	16:39:31	589	4.999	48					
19/06/02	16:39:58	590	26.999	49	78	18	17	49	18
19/06/02	16:39:59	591	1.023	48					
19/06/02	16:40:01	592	1.977	49					
19/06/02	16:40:02	593	1.021	48					
19/06/02	16:40:04	594	1.981	48					
19/06/02	16:40:06	595	1.996	50					
19/06/02	16:40:08	596	1.996	51					
19/06/02	16:40:09	597	1.015	54					
19/06/02	16:40:11	598	1.979	55					

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:40:14	599	2.996	57					
19/06/02	16:40:16	600	2.007	53					
19/06/02	16:40:20	601	4.012	47					
19/06/02	16:40:21	602	1.023	46					
19/06/02	16:40:26	603	4.97	50					
19/06/02	16:40:27	604	1.016	49					
19/06/02	16:40:29	605	1.988	49					
19/06/02	16:40:29	606	0.775	47					
19/06/02	16:40:31	607	1.229	47					
19/06/02	16:40:47	608	15.988	52					
19/06/02	16:40:51	609	4.008	49	79	7	6	49	7
19/06/02	16:40:52	610	0.915	47					
19/06/02	16:40:53	611	1.104	48					
19/06/02	16:40:54	612	1.021	50					
19/06/02	16:40:57	613	2.959	49					
19/06/02	16:40:58	614	1.01	54					
19/06/02	16:41:02	615	3.976	56					
19/06/02	16:41:18	616	16.028	44	80	6	5	44	6
19/06/02	16:41:19	617	1.022	43					
19/06/02	16:41:20	618	0.82	46					
19/06/02	16:41:20	619	0.691	48					
19/06/02	16:41:22	620	1.457	47					
19/06/02	16:41:26	621	3.993	50					
19/06/02	16:41:33	622	6.992	55					
19/06/02	16:41:38	623	5.004	52	81	12	11	52	12
19/06/02	16:41:39	624	1.018	53					
19/06/02	16:41:43	625	3.998	45					
19/06/02	16:41:46	626	2.988	50					
19/06/02	16:41:47	627	1.021	50					
19/06/02	16:41:48	628	1.019	50					
19/06/02	16:41:51	629	2.961	50					
19/06/02	16:41:57	630	6	50					
19/06/02	16:41:58	631	1.021	50					
19/06/02	0.695833	632	1.978	50					
19/06/02	16:42:03	633	3	50					
19/06/02	16:42:05	634	2.005	48					
19/06/02	16:42:21	635	15.992	52	82	5	4	52	5
19/06/02	16:42:24	636	2.998	53					
19/06/02	16:42:28	637	3.995	56					
19/06/02	16:42:32	638	4.007	52					
19/06/02	16:42:35	639	2.999	52					
19/06/02	16:42:41	640	5.996	55					
19/06/02	16:42:49	641	7.99	61					
19/06/02	16:42:53	642	4.022	49	83	17	16	49	17
19/06/02	16:42:54	643	1.025	48					
19/06/02	16:42:55	644	1.024	47					
19/06/02	16:42:58	645	2.959	45					
19/06/02	16:42:59	646	1.008	50					
19/06/02	16:43:04	647	4.977	52					
19/06/02	16:43:07	648	3.008	48					
19/06/02	16:43:08	649	1.016	50					
19/06/02	16:43:09	650	1.015	52					
19/06/02	16:43:13	651	3.963	51					
19/06/02	16:43:14	652	0.92	50					
19/06/02	16:43:19	653	5.088	47					
19/06/02	16:43:20	654	1.015	50					
19/06/02	16:43:22	655	1.988	46					
19/06/02	16:43:24	656	2.004	45					
19/06/02	16:43:25	657	0.858	45					
19/06/02	16:43:26	658	1.138	46					
19/06/02	16:43:56	659	29.987	52					
19/06/02	16:43:59	660	3.008	48					
19/06/02	16:44:08	661	8.999	49	84	18	17	49	18
19/06/02	16:44:10	662	2	49					
19/06/02	16:44:10	663	0.775	48					
19/06/02	16:44:15	664	4.227	48					
19/06/02	16:44:17	665	2.006	45					

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:44:19	666	2.002	45					
19/06/02	16:44:24	667	4.99	49					
19/06/02	16:44:26	668	2.01	45					
19/06/02	16:44:27	669	1.009	44					
19/06/02	16:44:29	670	1.995	43					
19/06/02	16:44:30	671	0.833	44					
19/06/02	16:44:32	672	2.161	45					
19/06/02	16:44:33	673	1.021	45					
19/06/02	16:44:33	674	0.661	46					
19/06/02	16:44:35	675	1.313	47					
19/06/02	16:44:36	676	1.028	44					
19/06/02	16:44:38	677	1.971	48					
19/06/02	16:44:43	678	4.995	50					
19/06/02	16:44:52	679	9.015	44	85	4	3	44	4
19/06/02	16:44:54	680	1.997	45					
19/06/02	16:44:56	681	2	45					
19/06/02	16:44:59	682	2.996	47					
19/06/02	16:45:06	683	6.999	47	86	8	7	47	8
19/06/02	16:45:08	684	2.003	46					
19/06/02	16:45:09	685	1.028	43					
19/06/02	16:45:11	686	1.985	41					
19/06/02	16:45:12	687	1.026	40					
19/06/02	16:45:14	688	1.976	41					
19/06/02	16:45:19	689	4.978	49					
19/06/02	16:45:23	690	3.997	50					
19/06/02	16:45:38	691	14.994	53					
19/06/02	16:45:44	692	6.01	48	87	2	1	48	2
19/06/02	16:45:46	693	2.002	47					
19/06/02	16:45:56	694	9.995	50	88	18	17	50	18
19/06/02	16:45:58	695	1.997	51					
19/06/02	16:46:01	696	3.012	46					
19/06/02	16:46:05	697	3.99	50					
19/06/02	16:46:07	698	2	50					
19/06/02	16:46:09	699	1.999	50					
19/06/02	16:46:10	700	1.014	53					
19/06/02	16:46:12	701	1.982	52					
19/06/02	16:46:14	702	2.003	51					
19/06/02	16:46:16	703	2.007	48					
19/06/02	16:46:21	704	4.994	50					
19/06/02	16:46:23	705	2.007	47					
19/06/02	16:46:25	706	2.004	46					
19/06/02	16:46:26	707	1.017	47					
19/06/02	16:46:29	708	2.974	50					
19/06/02	16:46:32	709	3.004	48					
19/06/02	16:46:33	710	1.022	47					
19/06/02	16:46:33	711	0.81	47					
19/06/02	16:46:35	712	1.173	46					
19/06/02	16:46:42	713	6.992	49					
19/06/02	16:46:43	714	0.953	46	89	6	5	46	6
19/06/02	16:46:45	715	2.053	47					
19/06/02	16:46:47	716	2.002	46					
19/06/02	16:46:49	717	2.007	43					
19/06/02	16:46:52	718	2.995	45					
19/06/02	16:46:53	719	1.007	50					
19/06/02	16:47:11	720	17.969	56					
19/06/02	16:47:20	721	8.99	63					
19/06/02	16:47:22	722	2.014	54	90	6	5	54	6
19/06/02	16:47:24	723	2.008	50					
19/06/02	16:47:26	724	1.999	50					
19/06/02	16:47:27	725	1.022	50					
19/06/02	16:47:29	726	1.988	46					
19/06/02	16:47:30	727	1.012	50					
19/06/02	16:47:47	728	16.98	50	91	2	1	50	2
19/06/02	16:47:49	729	1.999	50					
19/06/02	16:48:12	730	22.998	51					
19/06/02	16:48:20	731	7.984	60					
19/06/02	16:48:21	732	1.004	57	92	2	1	57	2

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:48:24	733	3.006	54					
19/06/02	16:48:34	734	10.012	48					
19/06/02	16:48:39	735	4.999	49					
19/06/02	16:48:43	736	4.002	48					
19/06/02	16:49:04	737	20.989	53	93	2	1	53	2
19/06/02	16:49:05	738	1.016	55					
19/06/02	16:49:26	739	20.993	49	94	7	6	49	7
19/06/02	16:49:27	740	1.021	49					
19/06/02	16:49:28	741	1.02	49					
19/06/02	16:49:28	742	0.711	48					
19/06/02	16:49:30	743	1.25	48					
19/06/02	16:49:32	744	1.996	50					
19/06/02	16:49:35	745	3.004	48					
19/06/02	16:49:45	746	9.99	52	95	6	5	50	6
19/06/02	16:49:46	747	1.013	50					
19/06/02	16:49:47	748	1.013	49					
19/06/02	16:49:51	749	3.983	48					
19/06/02	16:49:52	750	1.025	46					
19/06/02	16:49:54	751	1.983	45					
19/06/02	16:50:11	752	16.986	51	96	5	4	51	5
19/06/02	16:50:15	753	4.003	50					
19/06/02	16:50:16	754	1.026	47					
19/06/02	16:50:17	755	1.022	46					
19/06/02	16:50:19	756	1.965	44					
19/06/02	16:50:29	757	9.976	55					
19/06/02	16:50:37	758	8.013	49	97	7	6	49	7
19/06/02	16:50:41	759	4.004	47					
19/06/02	16:50:43	760	1.994	50					
19/06/02	16:50:46	761	3.005	47					
19/06/02	16:50:47	762	1.015	50					
19/06/02	16:50:49	763	1.983	48					
19/06/02	16:50:51	764	1.996	50					
19/06/02	16:50:58	765	6.995	52	98	21	20	52	21
19/06/02	16:50:59	766	1.026	52					
19/06/02	16:51:04	767	4.975	52					
19/06/02	16:51:06	768	2	52					
19/06/02	16:51:08	769	2.008	48					
19/06/02	16:51:10	770	2.002	47					
19/06/02	16:51:12	771	2	47					
19/06/02	16:51:13	772	1.019	48					
19/06/02	16:51:14	773	1.022	47					
19/06/02	16:51:16	774	1.959	47					
19/06/02	16:51:18	775	2.005	45					
19/06/02	16:51:19	776	1.021	45					
19/06/02	16:51:23	777	3.97	49					
19/06/02	16:51:24	778	1.028	46					
19/06/02	16:51:24	779	0.785	48					
19/06/02	16:51:27	780	2.187	49					
19/06/02	16:51:32	781	5	49					
19/06/02	16:51:33	782	1.019	50					
19/06/02	16:51:34	783	1.005	48					
19/06/02	16:51:36	784	1.977	49					
19/06/02	16:51:41	785	4.998	50					
19/06/02	16:51:54	786	13.004	48	99	11	10	48	11
19/06/02	16:51:55	787	1.025	46					
19/06/02	16:51:56	788	0.998	46					
19/06/02	16:51:58	789	1.975	49					
19/06/02	0.702778	790	1.995	51					
19/06/02	16:52:02	791	1.999	51					
19/06/02	16:52:04	792	2.001	51					
19/06/02	16:52:08	793	4.005	49					
19/06/02	16:52:10	794	1.998	50					
19/06/02	16:52:13	795	3	50					
19/06/02	16:52:15	796	1.998	50					
19/06/02	16:52:21	797	5.987	57					
19/06/02	16:52:26	798	5.008	53	100	13	12	53	13
19/06/02	16:52:29	799	3	53					

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:52:31	800	2.009	49					
19/06/02	16:52:34	801	3.002	48					
19/06/02	16:52:37	802	2.997	49					
19/06/02	16:52:40	803	2.994	52					
19/06/02	16:52:42	804	2.002	51					
19/06/02	16:52:43	805	1.03	47					
19/06/02	16:52:45	806	1.977	48					
19/06/02	16:52:47	807	2.007	45					
19/06/02	16:52:48	808	0.855	45					
19/06/02	16:52:49	809	1.159	47					
19/06/02	16:52:50	810	0.963	45					
19/06/02	16:52:55	811	5.017	47	101	5	4	47	5
19/06/02	16:52:56	812	0.859	47					
19/06/02	16:52:57	813	1.145	46					
19/06/02	16:52:58	814	1.015	48					
19/06/02	0.703472	815	1.977	49					
19/06/02	16:53:06	816	6.004	47	102	12	11	47	12
19/06/02	16:53:07	817	1.021	49					
19/06/02	16:53:08	818	1.019	49					
19/06/02	16:53:11	819	2.964	46					
19/06/02	16:53:12	820	1.013	49					
19/06/02	16:53:15	821	2.974	51					
19/06/02	16:53:17	822	1.993	55					
19/06/02	16:53:19	823	2.004	53					
19/06/02	16:53:21	824	1.997	55					
19/06/02	16:53:22	825	1.021	54					
19/06/02	16:53:23	826	1.011	55					
19/06/02	16:53:26	827	2.963	57					
19/06/02	16:53:37	828	11.015	50					
19/06/02	0.704167	829	22.989	55	103	8	7	55	8
19/06/02	16:54:01	830	1.018	55					
19/06/02	16:54:05	831	3.986	53					
19/06/02	16:54:07	832	1.995	56					
19/06/02	16:54:08	833	1.023	54					
19/06/02	16:54:09	834	1.027	50					
19/06/02	16:54:25	835	15.96	50					
19/06/02	16:54:26	836	1.023	49					
19/06/02	16:54:42	837	15.985	47	104	8	7	47	8
19/06/02	16:54:44	838	1.99	51					
19/06/02	16:54:48	839	3.993	55					
19/06/02	16:54:49	840	1.024	53					
19/06/02	16:54:50	841	1.022	52					
19/06/02	16:54:52	842	1.962	51					
19/06/02	16:54:54	843	1.999	51					
19/06/02	16:54:56	844	1.998	52					
19/06/02	16:55:20	845	24.012	47	105	3	2	47	3
19/06/02	16:55:21	846	1.016	49					
19/06/02	16:55:22	847	1.023	47					
19/06/02	16:55:29	848	6.962	47	106	4	3	47	4
19/06/02	16:55:32	849	3.003	45					
19/06/02	16:55:33	850	1.023	45					
19/06/02	16:55:37	851	3.956	55					
19/06/02	16:56:17	852	40.005	52	107	11	10	52	11
19/06/02	16:56:18	853	1.022	52					
19/06/02	16:56:24	854	5.973	55					
19/06/02	16:56:27	855	3.013	49					
19/06/02	16:56:28	856	1.022	48					
19/06/02	16:56:31	857	2.978	49					
19/06/02	16:56:32	858	1.015	51					
19/06/02	16:56:34	859	1.982	50					
19/06/02	16:56:36	860	2.001	50					
19/06/02	16:56:37	861	0.871	50					
19/06/02	16:56:38	862	1.118	55					
19/06/02	16:56:46	863	8.005	52	108	2	1	52	2
19/06/02	16:56:49	864	3.008	49					
19/06/02	16:56:57	865	8.004	47					
19/06/02	16:57:10	866	12.99	51					

Date	Time	Vehicle #	Headway (sec)	Speed (mph)	No. of Platoons	Veh in Platoon	Vehicles Following	Speed of Lead Veh	Veh in Platoon
19/06/02	16:57:28	867	17.998	52					
19/06/02	16:57:45	868	16.995	55	109	15	14	55	15
19/06/02	16:57:48	869	3.003	53					
19/06/02	16:57:49	870	0.934	53					
19/06/02	16:57:51	871	2.064	55					
19/06/02	16:57:53	872	2.001	54					
19/06/02	16:57:57	873	4.016	47					
19/06/02	16:57:58	874	1.023	45					
19/06/02	0.706944	875	1.982	45					
19/06/02	16:58:02	876	1.994	47					
19/06/02	16:58:05	877	3.006	45					
19/06/02	16:58:07	878	1.988	50					
19/06/02	16:58:08	879	1.017	51					
19/06/02	16:58:11	880	2.987	48					
19/06/02	16:58:13	881	1.997	49					
19/06/02	16:58:18	882	5.013	44					
19/06/02	16:58:25	883	6.984	50					
19/06/02	16:58:26	884	1.023	49					
19/06/02	16:58:32	885	5.981	49	110	18	17	49	18
19/06/02	16:58:33	886	1.031	44					
19/06/02	16:58:36	887	2.979	45					
19/06/02	16:58:37	888	1.025	43					
19/06/02	16:58:39	889	1.982	42					
19/06/02	16:58:40	890	0.891	43					
19/06/02	16:58:41	891	1.106	44					
19/06/02	16:58:44	892	2.981	51					
19/06/02	16:58:47	893	2.988	57					
19/06/02	16:58:49	894	2	57					
19/06/02	16:58:52	895	2.998	59					
19/06/02	16:58:53	896	1.021	59					
19/06/02	16:58:56	897	2.988	53					
19/06/02	16:58:58	898	1.998	55					
19/06/02	0.707639	899	2.004	52					
19/06/02	16:59:01	900	1.001	52					
19/06/02	16:59:03	901	2.008	48					
19/06/02	16:59:04	902	0.998	47					
19/06/02	16:59:10	903	5.989	55					
19/06/02	16:59:23	904	13.007	51					
19/06/02	16:59:26	905	3.014	45					
19/06/02	16:59:36	906	9.982	53	111	7	6	53	7
19/06/02	16:59:37	907	0.904	51					
19/06/02	16:59:38	908	1.097	52					
19/06/02	16:59:40	909	1.999	53					
19/06/02	16:59:41	910	1.004	54					
19/06/02	16:59:45	911	3.995	53					
19/06/02	16:59:48	912	3.004	51					
19/06/02	16:59:56	913	7.996	53					
Total		914			111	841	729		841
Percent in Platoon						92.0%	79.8%		
Average Platoon Length						8			
Max Platoon Length						30			
Min Platoon Length						2			